OMB No. 2040-0042 Approval Expires 12/31/2018

United States Environmental Protection Agency
Washington, DC 20460

Completion Form For Injection Wells

Administrative Information

1. Permittee: Florence Copper Inc.

Address *(Permanent Mailing Address) (Street, City, and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

2. Operator: Florence Copper Inc.

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

3. Facility Name: Florence Copper Inc.

Telephone Number: (520) 374-3984

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

4. Surface Location Description of Injection Well(s)

State: Arizona

County: Pinal

Surface Location Description

SE 1/4 of SW 1/4 of NE 1/4 of SW 1/4 of Section 28 Township 4S Range 9E

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1150 ft. frm (N/S) N Line of quarter section and 900 ft. from (E/W) E Line of quarter section.

Well Activity

- [ ] Class I
- [ ] Class II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [x] Class III
- [ ] Other

Well Status

- [x] Operating
- [ ] Modification/Conversion
- [ ] Proposed

Type of Permit

- [ ] Individual
- [x] Area : Number of Wells 33

Lease Number: NA

Well Number: O-03

Submit with this Completion Form the attachments listed in Attachments for Completion Form.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Ian Ream, Senior Hydrogeologist		9-12-2018

Attachments to be submitted with the Completion report:

I. Geologic Information

1. Lithology and Stratigraphy

A. Provide a geologic description of the rock units penetrated by name, age, depth, thickness, and lithology of each rock unit penetrated.

B. Provide a description of the injection unit.

(1) Name
(2) Depth (drilled)
(3) Thickness
(4) Formation fluid pressure
(5) Age of unit
(6) Porosity (avg.)
(7) Permeability
(8) Bottom hole temperature
(9) Lithology
(10) Bottom hold pressure
(11) Fracture pressure

C. Provide chemical characteristics of formation fluid (attach chemical analysis).

D. Provide a description of freshwater aquifers.

(1) Depth to base of fresh water (less than 10,000 mg/l TDS).
(2) Provide a geologic description of aquifer units with name, age, depth, thickness, lithology, and average total dissolved solids.

II. Well Design and Construction

1. Provide data on surface, intermediate, and long string casing and tubing. Data must include material, size, weight, grade, and depth set.

2. Provide data on the well cement, such as type/class, additives, amount, and method of emplacement.

3. Provide packer data on the packer (if used) such as type, name and model, setting depth, and type of annular fluid used.

4. Provide data on centralizers to include number, type and depth.

5. Provide data on bottom hole completions.

6. Provide data on well stimulation used.

III. Description of Surface Equipment

1. Provide data and a sketch of holding tanks, flow lines, filters, and injection pump.

IV. Monitoring Systems

1. Provide data on recording and nonrecording injection pressure gauges, casing-tubing annulus pressure gauges, injection rate meters, temperature meters, and other meters or gauges.

2. Provide data on constructed monitor wells such as location, depth, casing diameter, method of cementing, etc.

V. Logging and Testing Results

Provide a descriptive report interpreting the results of geophysical logs and other tests. Include a description and data on deviation checks run during drilling.

VI. Provide an as-built diagrammatic sketch of the injection well(s) showing casing, cement, tubing, packer, etc., with proper setting depths. The sketch should include well head and gauges.

VII. Provide data demonstrating mechanical integrity pursuant to 40 CFR 146.08.

VIII. Report on the compatibility of injected wastes with fluids and minerals in both the injection zone and the confining zone.

IX. Report the status of corrective action on defective wells in the area of review.

X. Include the anticipated maximum pressure and flow rate at which injection will operate.

HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

TECHNICAL MEMORANDUM

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling, Installation, and Integrity Testing Summary
PTF Observation Well O-03
Florence Copper Inc., Florence, Arizona

This document describes drilling, installation, and testing of the Production Test Facility (PTF) observation well O-03 for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including a description of the equipment used to perform the work, details of the completed work, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well O-03 is 55-227232; the Well Registry Report is included in Appendix A. Well O-03 is located in the southwest quarter of the northeast quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 East of the Gila and Salt River Baseline and Meridian (D(4-9)28CAC). Well O-03 is located within the Underground Injection Control (UIC) Permitted Area of Review (AOR) for UIC Permit R9UIC-AZ3-FY11-1 and was completed as a Class III Observation well for the PTF (Figure 1).

Florence Copper contracted National Exploration, Wells, & Pumps (National) to drill, install, and test well O-03 in accordance with *Bid Specification: Drilling, Installation, and Testing of Class III Observation Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, Inc. [Haley & Aldrich], 2017). A Schramm T685WS drilling rig was used for all drilling and construction activities. Haley & Aldrich provided oversight of drilling activities, geophysical logging, well installation, and testing. All reported depths are in feet below ground surface unless otherwise noted.

I. Geologic Information

1. Lithology and Stratigraphy

A. Geology of Penetrated Units

The geology penetrated during the drilling of the Class III well O-03 is summarized in the table below and a lithologic log is included in Appendix B.

Lithologic Unit Name	Depth to Bottom of Unit (feet)	Thickness of Unit (feet)	Lithology and Age of Unit
Upper Basin Fill Unit (UBFU)	282	282	Alluvium; Quaternary to Tertiary
Middle Fine-Grained Unit (MFGU)	302	20	Alluvium; Tertiary
Lower Basin Fill Unit (LBFU)	385	83	Alluvium; Tertiary to Cretaceous
Bedrock Oxide Unit (Oxide)	Not encountered	>823	Igneous porphyry – Precambrian

B. Description of Injection Unit

Name	Bedrock Oxide Unit
Depth Drilled	1,208 feet
Thickness	>823 feet
Formation Fluid Pressure	Atmospheric plus head of freshwater – no additional formation pressure
Age of Unit	Precambrian with intrusions of Precambrian to Tertiary rocks
Porosity[1]	Approximately 6 to 8.5%
Permeability	Hydraulic Conductivity = 0.56 feet per day
Bottom Hole Temperature	32.8 degrees Celsius
Lithology	Igneous porphyry – quartz monzonite, granodiorite with diabase and andesite dykes (detailed log included in Appendix B)
Bottom Hole Pressure	Approximately 430 pounds per square inch (PSI) (pressure exerted by the column of freshwater with no additional contribution from formation pressure)
Fracture Pressure	0.65 PSI per foot

[1] Porosity values for the bedrock oxide unit are approximate values from calculated neutron porosity values from injection well borehole surveys.

C. Chemical Characteristics of Formation Fluid

The chemical characteristics of the formation fluid in the injection zone are summarized below and the results of the sampling of the center PTF wellfield well R-09. The table below summarizes the primary chemical characteristics detected in a formation fluid sample collected on 23 April 2018, the complete analytical report is included in Appendix C.

Analyte	Result (mg/L)
Metals	
Aluminum	<0.08
Antimony	<0.005
Arsenic	0.0016
Barium	0.071
Beryllium	<0.0005
Cadmium	<0.00025
Calcium	140
Chromium	0.0051
Cobalt	<0.00025
Copper	0.011
Iron	<0.30
Lead	<0.0005
Magnesium	27
Manganese	0.002
Mercury	<0.001
Nickel	0.0033
Potassium	6.8
Selenium	<0.0025
Sodium	170
Thallium	<0.0005
Zinc	<0.04
Anions	
Bicarbonate	150
Chloride	310
Fluoride	<0.5
Nitrate	8.8
Sulfate	190
Field Parameters	
Total Dissolved Solids	1,000
pH	7.8
Radiochemicals	
Uranium	0.016
Notes: *mg/L = milligrams per liter*	

Results of the sampling of well O-03 are included in the *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings* (Brown and Caldwell, 2018).

D. Description of Freshwater Aquifers

1) The depth to the base of the freshwater aquifer is defined by the interface where deeper formation fluid exhibits a total dissolved solids (TDS) value of 10,000 milligrams per liter (mg/L). The depth of the 10,000 mg/L interface is deeper than all of the wells drilled at the site and consequently has not been defined.

2) The geologic description of the aquifer units is included below:

Aquifer Unit Name	Age	Depth (feet)	Thickness (feet)	Lithology	Average Total Dissolved Solids[1] (mg/L)
UBFU	Quaternary/Tertiary	0 to 282	282	Alluvium	914
LBFU	Tertiary	302 to 385	83	Alluvium	754
1 Average TDS values calculated from UBFU and LBFU monitoring well ambient monitoring results near the PTF.					

II. Well Design and Construction

1. Well O-03 Casing Installed:

Casing	Material	Diameter (inches)	Weight (pounds per foot)	Depths (feet)	Borehole Diameter (inches)	Drilling Method
Surface	Mild Steel	14 O.D. 13⅜ I.D.	47.36	0 to 40	24	Solid-stem auger
Well Casing	Fiberglass Reinforced Plastic	5.47 O.D. 4.74 I.D.	5.40	-0.5 to 450	12¼	Reverse Flooded Rotary
Screen	PVC SCH80 with 0.020-inch wide slots	5.56 O.D. 4.81 I.D.	4.08	450 to 1,201	12¼	Reverse Flooded Rotary
Notes: *I.D. = inside diameter* *O.D. = outside diameter* *PVC = polyvinyl chloride* *SCH = Schedule*						

2. Well Cement

Cement Interval	Cement Type	Additives	Amount Installed (cubic yards)	Method of Emplacement
Surface Casing	Type V Neat 21 sack slurry	None	3[1]	Submerged tremie
Well Casing	Type V Neat 21 sack slurry	None	13.0	Submerged Tremie
[1] Surface casing cement mixed by drilling contractor, volume estimated.				

Field forms documenting pipe tallies, annular materials, and cement tickets are included in Appendix D.

3. Annular Packers

No annular packers were used during construction of well O-03.

4. Centralizers

Casing	Centralizer Type	Number and Spacing
Well – FRP and PVC	Stainless steel – Heavy Duty	28 installed – every 40 feet
Notes: *FRP = fiberglass reinforced plastic* *PVC = polyvinyl chloride*		

5. Bottom Hole Completion

There is no bottom hole completion as this is not an oil/gas well. The well was completed at the bottom with a stainless-steel endcap of the same diameter as the well screen.

6. Well Stimulation

No well stimulation was used during the drilling and construction of well O-03.

III. Description of Surface Equipment

1. Surface Equipment

Well O-03 is an observation well and has been equipped with a pressure transducer for monitoring water level and a low-flow pump for collecting fluid samples for analysis of specific conductance. A diagram of the wellhead is included in the well as-built in Figure 2.

IV. Monitoring Systems

1. Well monitoring equipment

Equipment Type	Location	Type	Purpose
Pressure Transducer	Well Casing	Recording	Monitor water column/pressure
Electrical Conductivity Sensors	Well Annulus	Non-recording	Monitor formation conductivity
Annular Conductivity Sensors	Well Annulus	Non-recording	Monitor formation conductivity

2. Monitoring Wells

There are a total of 16 monitoring wells associated with the PTF: 7 Point-of-Compliance (POC) wells, 7 U.S. Environmental Protection Agency (USEPA) supplemental monitoring wells, and 2 operational monitoring wells. The POC wells are located outside the AOR and are not constructed as Class III wells, the supplemental monitoring and operational monitoring wells are located within the AOR and are constructed as Class III wells as required by the UIC permit. The wells are summarized in the tables below by type.

POC Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval**	**Screened Lithologic Unit**
M14-GL	846750.23 746461.52	859	5 9/16 OD	Submerged tremie	778 to 838	LBFU
M15-GU	846697.17 746464.82	615	5 9/16 OD	Submerged tremie	554 to 594	LBFU
M22-O	846751.26 746514.47	1,140	5 9/16 OD to 528 feet; 4 ½ OD to 1,140 feet	Submerged tremie	932 to 1,130	Oxide
M23-UBF	846688.13 746512.48	250	6 5/8 OD	Submerged tremie	210 to 250	UBFU
M52-UBF	851092.00 774178.00	274	5 9/16	Submerged tremie	198 to 273	UBFU
M54-LBF	847331.96 746682.61	630	5 9/16	Submerged tremie	310 to 629	LBFU
M54-O	847342.99 746702.36	1,199	5 9/16	Submerged tremie	668 to 1,198	Oxide

Supplemental Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval**	**Screened Lithologic Unit**
M55-UBF	847541.46 746280.63	261	5	Submerged tremie	240 to 260	UBFU
M56-LBF	847518.70 746303.41	340	5	Submerged tremie	320 to 340	LBFU
M57-O	847378.37 746248.93	1,200	5	Submerged tremie	523 to 1,199	Oxide
M58-O	847672.23 746595.97	1,200	5	Submerged tremie	594 to 1,199	Oxide
M59-O	847934.95 746218.89	1,201	5	Submerged tremie	534 to 1,199	Oxide
M60-O	847599.37 745903.70	1,201	5	Submerged tremie	444 to 1,200	Oxide
M61-LBF	848184.46 746148.88	629	5	Submerged tremie	429 to 629	LBFU

Operational Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval**	**Screened Lithologic Unit**
MW-01-LBF	847487.97 746360.54	444	5	Submerged tremie	330 to 440	LBFU
MW-01-O	847499.04 746369.31	1,200	5	Submerged tremie	500 to 1,200	Oxide

V. Logging and Testing Results

Borehole geophysical logging was conducted on well O-03 in two phases: 1) open-hole surveys in the 12.25-inch borehole prior to installation of the well casing and screen, and 2) cased-hole surveys in the completed well.

The open-hole geophysical surveys completed at O-03 included:

- Spontaneous potential;
- Natural gamma;
- Electrical resistivity (short and long normal);
- Caliper with calculated volume;
- Temperature;
- Sonic; and
- Deviation.

The cased-hole geophysical surveys completed included:

- Sonic (for cement bond with fiberglass reinforced plastic [FRP]);
- 4 Pi Density (for cement bond with FRP);
- Dual Density (for cement bond with FRP); and
- Video Survey.

Open-hole geophysical surveys were used to support identification of the lithologic contacts, to evaluate the condition of the borehole, and to evaluate the deviation of the borehole.

The primary logs used to evaluate lithologic contacts are natural gamma ray, short (16-inch) and long (64-inch) normal electrical resistance and single-point resistance. The lithologic contacts for the Middle Fine-Grained Unit (MFGU) were selected based on the short and long resistance and the single-point resistance. All the resistivity logs decreased and stayed consistently low through the MFGU. This contact is generally a relatively sharp decrease in resistance at the top of the unit and a gradual increase in resistance below the bottom of the unit.

The contact between the Lower Basin Fill Unit (LBFU) and the bedrock at well O-03 was identified primarily with the resistance logs and correlated with the natural gamma. At this contact, there is an increase in the single-point resistance and the short normal resistance, indicating the formation has become more resistant. This is likely primarily due to the bedrock containing less water than the alluvial formation above.

For well O-03, the gamma is consistently at approximately 70 American Petroleum Institute (API) units throughout the Upper Basin Fill Unit (UBFU) and MFGU, a slight increase to approximately 80 API units in the LBFU, and at 385 feet the gamma shifts down to approximately 75 API units.

This log appears to behave slightly different than the others in that the shift in gamma at the oxide contact is not as prominent at other locations. The lithology change was verified with drilled cuttings, with copper minerals present beginning at 385 feet the lithology was confirmed to be Quartz Monzonite

bedrock oxide material. This change in the response of the natural gamma indicates the contact with the bedrock unit.

Cased-hole geophysical surveys were conducted to evaluate the cement seal, the casing-cement bond, and to evaluate the plumbness of the well. The cement-bond is discussed in Section VII.

Copies of all the open-hole geophysical logs are included in Appendix E; a figure summarizing the open-hole logs used to evaluate geology is included as Figure 3. The cased-hole logs used to evaluate cement bond are included in Appendix F**.**

VI. Well As-Built Diagram

An as-built diagram for well O-03 is included as Figure 2.

VII. Demonstration of Mechanical Integrity

A demonstration of Part I mechanical integrity of the well was completed using a standard annular pressure test (SAPT) in accordance with Part II.E.3.a.i.A of the UIC Permit. Mechanical integrity will be demonstrated every 2 years during operations. Well O-03 SAPT is summarized below.

The SAPT was conducted by installing an inflatable packer in the well secured with a threaded well seal at the surface. The packer was installed near the bottom of the FRP-cased portion of the well and the wellhead was equipped with a water-tight threaded wellhead; the packer was inflated to form a seal against the casing. The bottom 5 feet of the packer drop pipe was perforated to allow for communication between the tubing and the annulus of the packer assembly. The drop pipe extended through the wellhead and a high pressure/low volume pump was attached to the drop pipe to pressurize the test interval. A valve on the drop pipe at the surface was used to isolate the test interval once the planned test pressure was achieved.

An In-Situ LevelTROLL® pressure transducer with a data logger was installed at the well head and was connected to the packer assembly annulus interval via a National Pipe Thread adapter. The LevelTROLL was used to monitor and record pressure inside the well during the SAPT. To conduct the SAPT, water was pumped from a nearby well immediately prior to testing. Before the water was pumped into the test well, the water temperature was measured to ensure that it was similar to the ambient groundwater temperature of the test well to reduce the potential of differential temperature effects on the well casing. The SAPT for the Class III well was conducted by applying hydraulic pressure to the well casing and shutting in pressure between the packer and wellhead assembly, monitoring the shut-in pressure for a 30-minute period, then measuring the volume of water returned from the well casing after the pressure was released.

On 07 August 2017, the packer was installed to approximately 425 feet and the SAPT was conducted successfully two times. The USEPA SAPT form, a table of the data, and a chart of the data is provided in Appendix G.

Part II mechanical integrity is demonstrated by the cementing records included in this report (in accordance with Part II.E.3.ii.C of the UIC Permit) and will be demonstrated during operations by annular conductivity monitoring on the observation and multi-level sampling wells (in accordance with Part II.E.3.a.ii.A of the UIC Permit).

Cemented Interval	Cement Type	Calculated Grout Volume (cubic yards)	Installed Grout Volume (cubic yards)
Surface Casing	Type V 21 sack neat cement slurry	3.1	3.1
Well Casing	Type V 21 sack neat cement slurry	13.4	13

On 3 June 2017, a suite of geophysical logs was run over the entire length of the completed well to verify the grout seal. A summary of the logs completed to demonstrate cement bond are included in Appendix F.

There is not a bond log tool designed to evaluate cement bond with FRP casing, so the cement interval with FRP casing of well O-03 was evaluated using density logs. The logs collected included sonic, focused density, and 4pi density. Based on the measured density of the FRP cased interval of well O-03, no significant cement deficiencies were noted in the sonic data collected from approximately 226 feet (static water level) to 402 feet, and no significant deficiencies were noted in the 4pi density data collected from 37 to 402 feet.

The lower portion of the cement zone appears to have a lower density at the base of the cement seal from approximately 400 to 430 feet. There were no abnormalities witnessed during installation that could explain the anomaly; mud was thinned prior to installation of cement and cement was installed in one lift with the tremie at the bottom of the cement interval. A summary of the FRP cased data is included in the well completion summary in Appendix F.

VIII. Compatibility of Injected Waste

The Florence Copper Project is a Class III mineral extraction project and does not include the injection of any waste products of any kind. The injected fluid (lixiviant) is a carefully constituted in-situ copper recovery solution that will be recovered and recycled following injection.

The compatibility of the lixiviant was evaluated as part of the geochemical modeling completed by Florence Copper and summarized in the *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona* (Daniel B. Stephens Inc., 2014) which was included in Attachment H of the UIC Permit Application.

IX. Status of Corrective Action on Defective Wells in the Area of Review

There are not currently any defective wells in the AOR.

X. Maximum Pressures and Flow Rates for O-03

Maximum Operating Pressure	Maximum Flow
Atmospheric	Not applicable – observation well

This well is an observation well used to monitor hydraulic control of the PTF. No fluids will be injected and only fluid to measure specific conductivity will be extracted using the installed low-flow pump.

XI. Well Development

Well O-03 was developed by the airlift method, followed by pumping, and was completed by National using a workover rig. To purge drilling fluids and solids, on 16 May 2017 an airline was temporarily installed to approximately 1,180 feet and airlift development of the well was conducted at approximately 50 gallons per minute (gpm). During airlift development, the airlift pump was turned on and off to surge the well. Airlift development was conducted for approximately 17 hours; after 7 hours, approximately 2 gallons of AquaClear PFD® polymer dispersant was swabbed into the screened interval of the well. The discharge was clear and sand-free at the end of the airlift development period.

To pump develop the well, a submersible pump was temporarily installed to approximately 1,195 feet on 19 May 2017. Prior to pumping, the static water level was approximately 242 feet. The pump development was conducted at approximately 17 gpm; the submersible pump was periodically turned off to surge the well during development. The discharge was sand-free and visually clear after approximately 1.5 hours of pump development; however, development was continued for 39.5 hours. The development was concluded on 22 May 2017, at which time the discharge was sand-free with turbidity values less than 5 Nephelometric Turbidity Units. Well development forms are included in Appendix H.

XII. Well Completion

A well video survey was conducted on 5 June 2017. The video log report is included as Appendix I. The video log depths are presented in feet below the top of the casing and so vary slightly from what is recorded, but with the correction for stick up are the same.

The video log indicates the top of fill in the well is at 1,201 feet.

The surveyed location for well O-03 is:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
746053.02	847831.43	1478.66

***Notes**:*
Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988.
amsl – feet above mean sea level

XIII. Downhole Equipment

The equipment installed in well O-03 includes:

- QED® low-flow sampling pump hung on drop tubing – pump at 600 feet; and
- Pressure transducer.

The type and depth of equipment installed in each well is not constrained by the UIC Permit or Aquifer Protection Permit (APP). This information is provided in accordance with Section 2.7.4.3 of the APP. Operational consideration may require that the type and depth of equipment may need to be changed in response to conditions observed during operations.

XIV. References

Brown and Caldwell, Inc., 2018. *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings*. September.

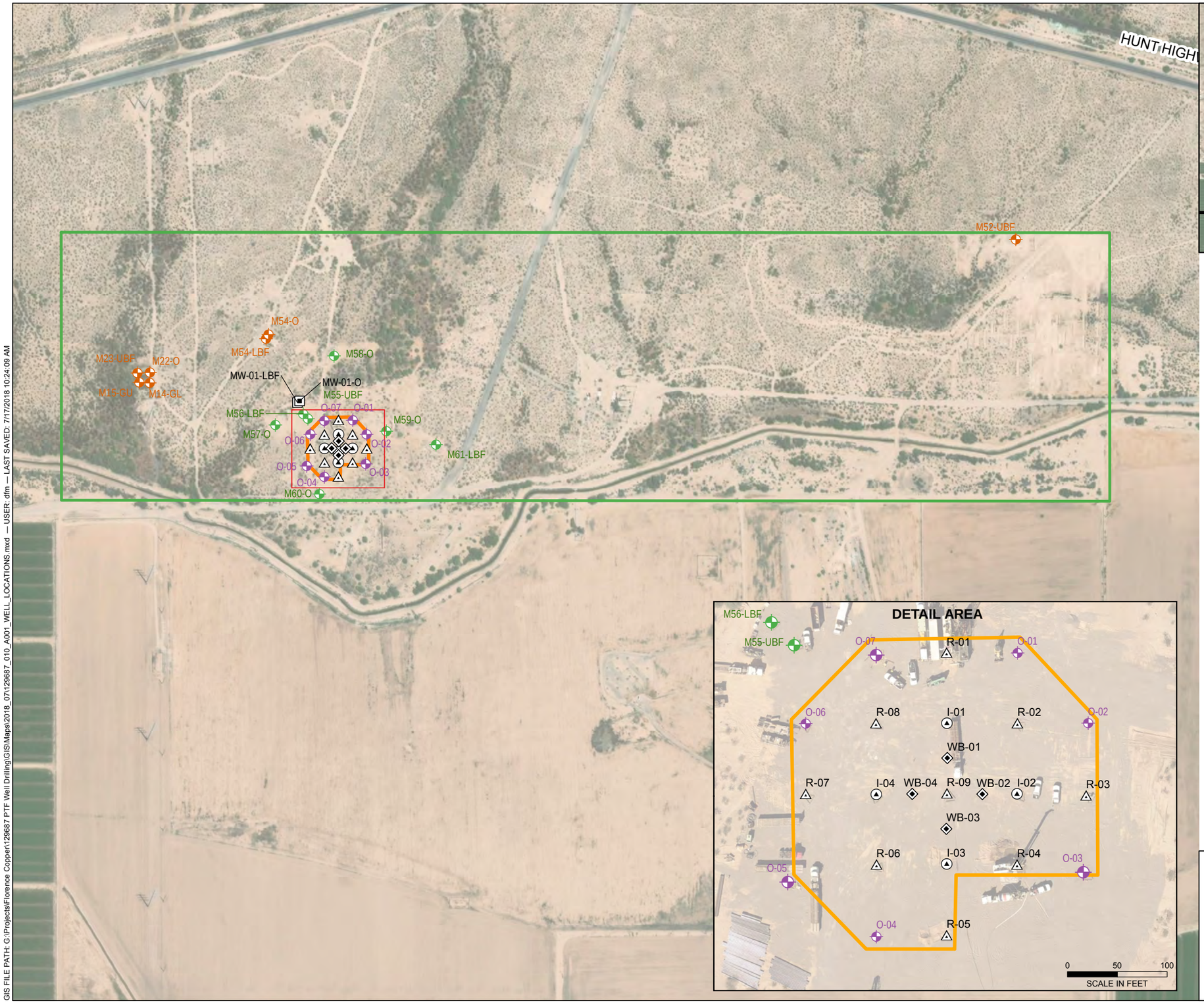
Daniel B. Stephens, Inc., 2014. *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona.* May.

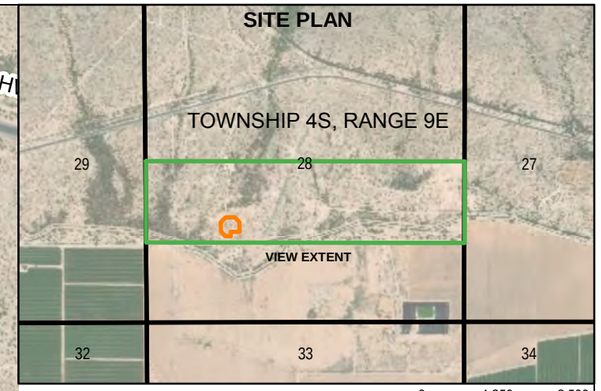
Haley & Aldrich, Inc., 2017. *Bid Specification: Drilling, Installation, and Testing of Class III Observation Wells, Production Test Facility, Florence, Arizona*. Revised September 2017.

Enclosures:

- Figure 1 – Well Locations
- Figure 2 – Well O-03 Well As-Built Diagram
- Figure 3 – Geophysical Data and Lithologic Log
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Lithologic Log
- Appendix C – Chemical Characteristics of Formation Water
- Appendix D – Well Completion Documentation
- Appendix E – Geophysical Logs
- Appendix F – Cement Bond Log Summary
- Appendix G – SAPT Documentation
- Appendix H – Well Development Field Forms
- Appendix I – Well Video Log

FIGURES





LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

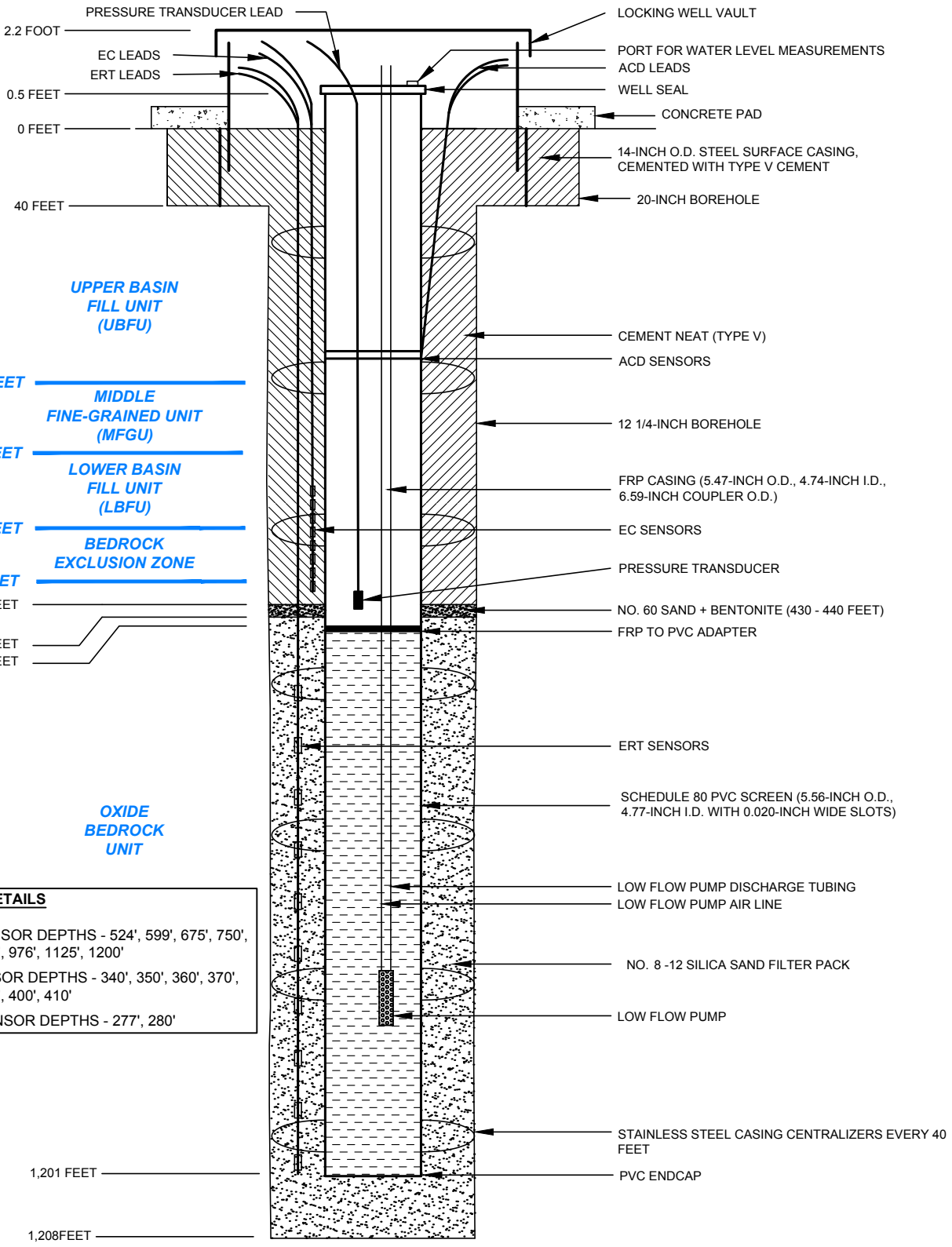
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



SENSOR DETAILS

- ERT SENSOR DEPTHS - 524', 599', 675', 750', 825', 901', 976', 1125', 1200'
- EC SENSOR DEPTHS - 340', 350', 360', 370', 380', 390', 400', 410'
- ACD SENSOR DEPTHS - 277', 280'

NOTES

1. WELL REGISTRATION NO.: 55-227232
2. CADASTRAL LOCATION: D (4-9) 28 CAC
3. MEASURING POINT ELEVATION: 1478.83' AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. ACD = ANNULAR CONDUCTIVITY DEVICE
9. EC = ELECTRICAL CONDUCTIVITY
10. ERT = ELECTRICAL RESISTIVITY TOMOGRAHY

HALEY ALDRICH

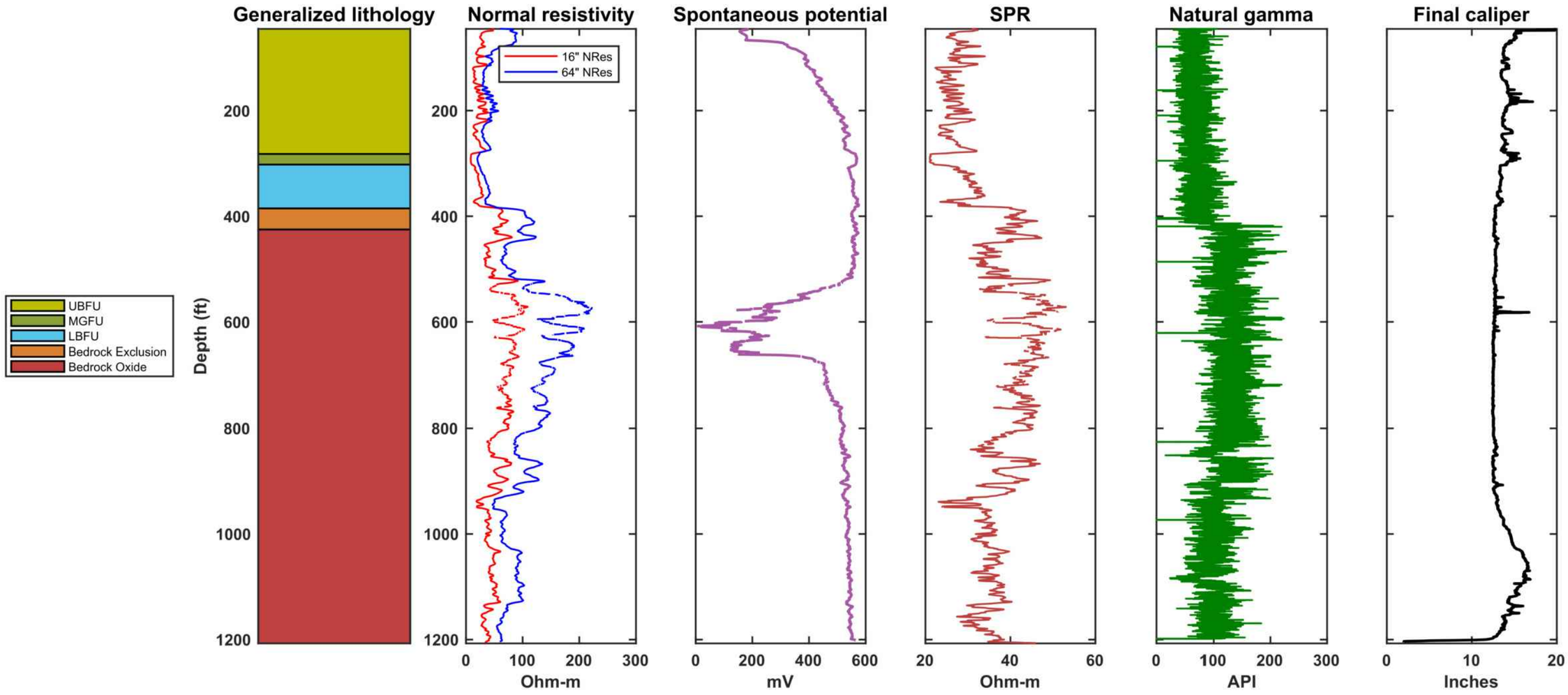
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

OBSERVATION WELL O-03 AS-BUILT DIAGRAM

FLORENCE COPPER

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 2



HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

OBSERVATION WELL O-03 GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
JUNE 2018

FIGURE 3

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8627 • (602) 771-8690 fax
· www.azwater.gov ·

Well Driller Report and Well Log

9/25/17

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER: D(4-9)28CBD
WELL REGISTRATION NUMBER: **55 -** 227232
PERMIT NUMBER (IF ISSUED):

RECEIVED
AUG 9 2017
ARIZONA DEPARTMENT OF WATER RESOURCES

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME	DWR LICENSE NUMBER
National EWP	823
ADDRESS	**TELEPHONE NUMBER**
1200 west San Pedro Street	480-558-3500
CITY / STATE / ZIP	**FAX**
Gilbert, AZ, 85233	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Florence Copper, INC A.S.L.D.

MAILING ADDRESS
1575 W.Hunt HWY

CITY / STATE / ZIP CODE
Florence, AZ, 85132

CONTACT PERSON NAME AND TITLE
Ian Ream, Senior Hydraulogist

TELEPHONE NUMBER: 520 374 3984
FAX:

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.)
O-03

Location of Well

WELL LOCATION ADDRESS (IF ANY)
Same as well owner

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0S	9.0 E	28	~~SE~~ SW ¼	NW ¼	~~SW~~ SE ¼

LATITUDE			LONGITUDE		
33 ° Degrees	2 ' Minutes	60 "N Seconds	111 ° Degrees	26 ' Minutes	7 "W Seconds

3' 0"

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL
1492 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☒ NAD-83 ☐ Other (*please specify*):

COUNTY: Pinal

ASSESSOR'S PARCEL ID NUMBER
BOOK 0 MAP 0 PARCEL 0

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify)*:

Method of Well Development

CHECK ALL THAT APPLY
- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Condition of Well

CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify)*:

Construction Dates

DATE WELL CONSTRUCTION STARTED: 5/7/17
DATE WELL CONSTRUCTION COMPLETED: 5/8/17

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY

DATE: 8-3-17

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227232

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
1210 feet Feet Below Land Surface	1201 feet Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
220 Feet Below Land Surface	5/8/17	12:00	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	40	20
40	1208	12.25

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	40	14	x				x						
-1.58	450	5.56				Fiberglass	x						
450	1200	5.56		x							x		.020

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	430			x								
430	440							x	pel plug /Fine Sand			
440	1208								Filter Pack		x	8x12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227232

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE		Description	Check (T) every interval where water was encountered (if known)
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	
0	282	upper basin fill unit	
282	302	middle fine-grained unit	
302	385	lower basin fill unit	
385	1210	Bedrock	

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227232

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER
Florence Copper

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
0	0	0

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

1" = _____ ft

Run Date: 04/25/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C A C

Well Reg.No 55 - 227232

AMA PINAL AMA

Registered Name AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX AZ 85007

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 04/19/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL

Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well O-03
AZ State Land Dept. Mineral Lease #11-026500

Current Action

4/25/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

4/25/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

4/19/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-227232** WELL OWNER ID: O-03

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **AZ STATE LAND DEPT. 1616 W. ADAMS ST. ATTN: LISA ATKINS PHOENIX, AZ, 85007**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SW 1/4 of the **NE** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **April 19, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

April 25, 2017

AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX, AZ 85007

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 227232
File Number: D(4-9) 28 CAC

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB	FILE NUMBER
Pinal	PIN	11	D(4-9)28 CAC
RECEIVED DATE	WS		WELL REGISTRATION NUMBER
4/19/2017	08 UGR		55 - 227232
ISSUED DATE	REMEDIAL ACTION SITE		
4/25/2017	000		

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type

CHECK ONE

- ☒ Monitor
- ☐ Piezometer
- ☐ Vadose Zone
- ☐ Air Sparging
- ☐ Soil Vapor Extraction
- ☐ Other (*please specify*):

Proposed Action

CHECK ONE

- ☒ Drill New Well
- ☐ Deepen
- ☐ Modify

APR 19 2017

WELL REGISTRATION NUMBER (*if Deepening or Modifying*)
55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		1001

COUNTY WHERE WELL IS LOCATED
PINAL

SECTION 2. OWNER INFORMATION

Land Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
AZ State Land Dept (Mineral Lease # 11-026500)

MAILING ADDRESS
1616 W Adams St

CITY / STATE / ZIP CODE
Phoenix, AZ 85007

CONTACT PERSON NAME AND TITLE
Lisa Atkins, State Land Commissioner

TELEPHONE NUMBER: (602) 542-4631
FAX:

Well Owner (*check this box if Land Owner and Well Owner are same* ☐)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
Florence Copper, Inc.

MAILING ADDRESS
1575 W Hunt Hwy

CITY / STATE / ZIP CODE
Florence, AZ 85132

CONTACT PERSON NAME AND TITLE
Ian Ream, Senior Hydrogeologist

TELEPHONE NUMBER: (520) 374-3984
FAX: (520) 374-3999

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm

NAME: National EWP

DWR LICENSE NUMBER: 823
ROC LICENSE CATEGORY: A-4

TELEPHONE NUMBER: (480) 558-3500
FAX: 480-558-3525

EMAIL ADDRESS: jstephens@nationalewp.com

Consultant (*if applicable*)

CONSULTING FIRM
Haley & Aldrich, Inc.

CONTACT PERSON NAME
Mark Nicholls

TELEPHONE NUMBER: 602-760-2423
FAX: 602-760-2448

EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	☒	☐	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	☒	☐	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	☐	☒	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	☒	☐	If yes, please state O-03
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	☒	☐	If yes, please state agency contact & phone number David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	☐	☒	If yes, please state design pump capacity *(Gallons per Minute)*
7. Is this well a new well located in an Active Management Area **AND** intended to pump water for the purpose of remediating groundwater?	☐	☒	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. *(See instructions)*
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	☒	☐	If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 - 227232

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method	Method of Well Development	Grout Emplacement Method
CHECK ONE	CHECK ONE	CHECK ONE
☐ Air Rotary ☐ Bored or Augered ☐ Cable Tool ☐ Dual Rotary ☒ Mud Rotary ☐ Reverse Circulation ☐ Driven ☐ Jetted ☐ Air Percussion / Odex Tubing ☐ Other *(please specify)*:	☒ Airlift ☐ Bail ☐ Surge Block ☐ Surge Pump ☐ Other *(please specify)*:	☒ Tremie Pumped *(Recommended)* ☐ Gravity ☐ Pressure Grout ☐ Other *(please specify)*:
DATE CONSTRUCTION TO BEGIN 05/01/2017	**Method of Sealing at Reduction Points** CHECK ONE ☒ None ☐ Welded ☐ Swedged ☐ Packed ☐ Other *(please specify)*:	**Surface or Conductor Casing** CHECK ONE ☐ Flush Mount in a vault ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole / Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	MATERIAL TYPE (T): PVC	MATERIAL TYPE (T): ABS	MATERIAL TYPE (T): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	PERFORATION TYPE (T): WIRE WRAP	PERFORATION TYPE (T): SHUTTER SCREEN	PERFORATION TYPE (T): MILLS KNIFE	PERFORATION TYPE (T): SLOTTED	PERFORATION TYPE (T): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	18	0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
20	1210	10	0	500	5	☒	☐	☐	reinforced fiberglass	☒	☐	☐	☐	☐		
			500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Per Driller TW

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS	EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*
	220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

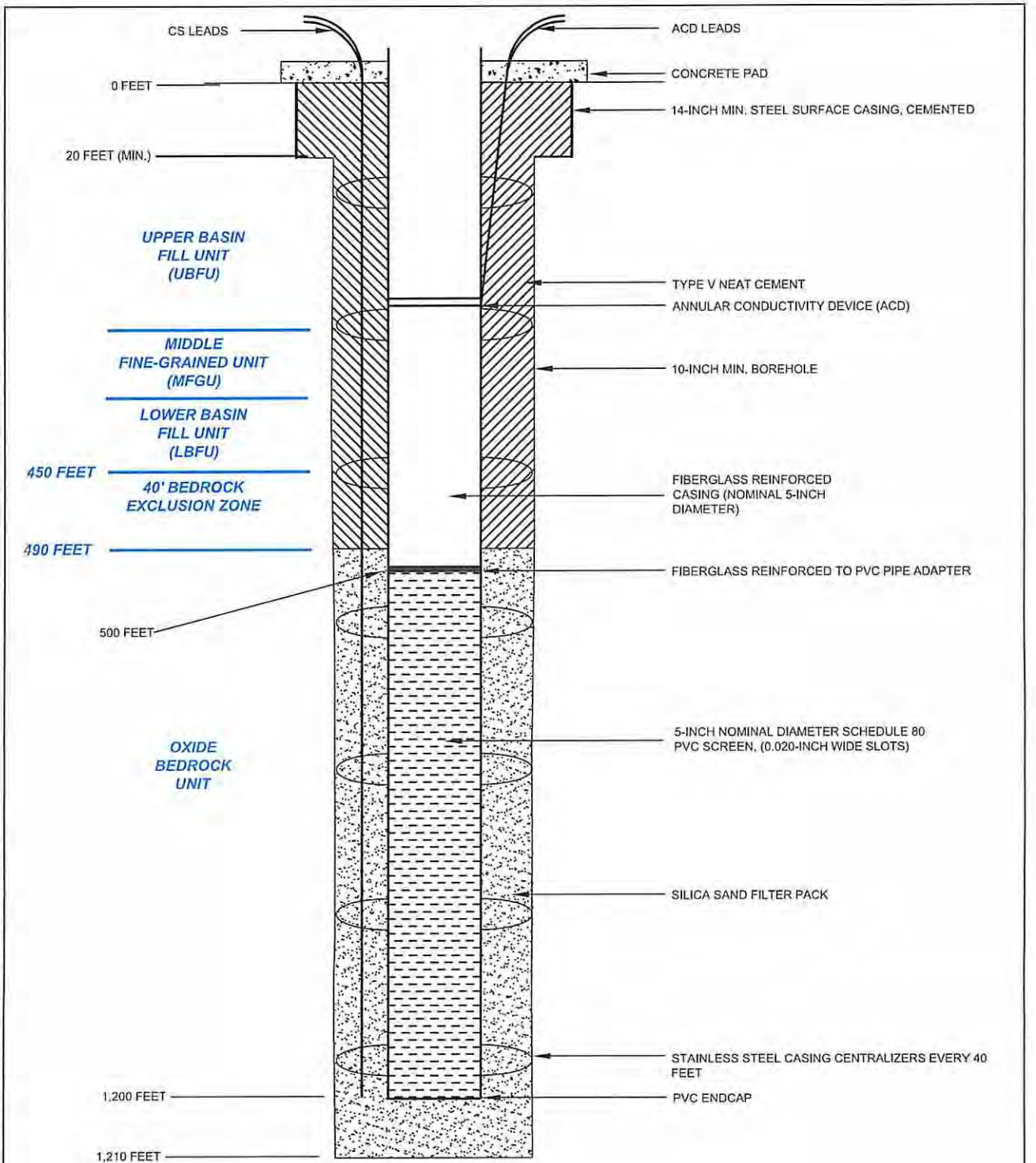
I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE 4-17-2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.



FLORENCE COPPER, INC.
FLORENCE, ARIZONA

HALEY ALDRICH

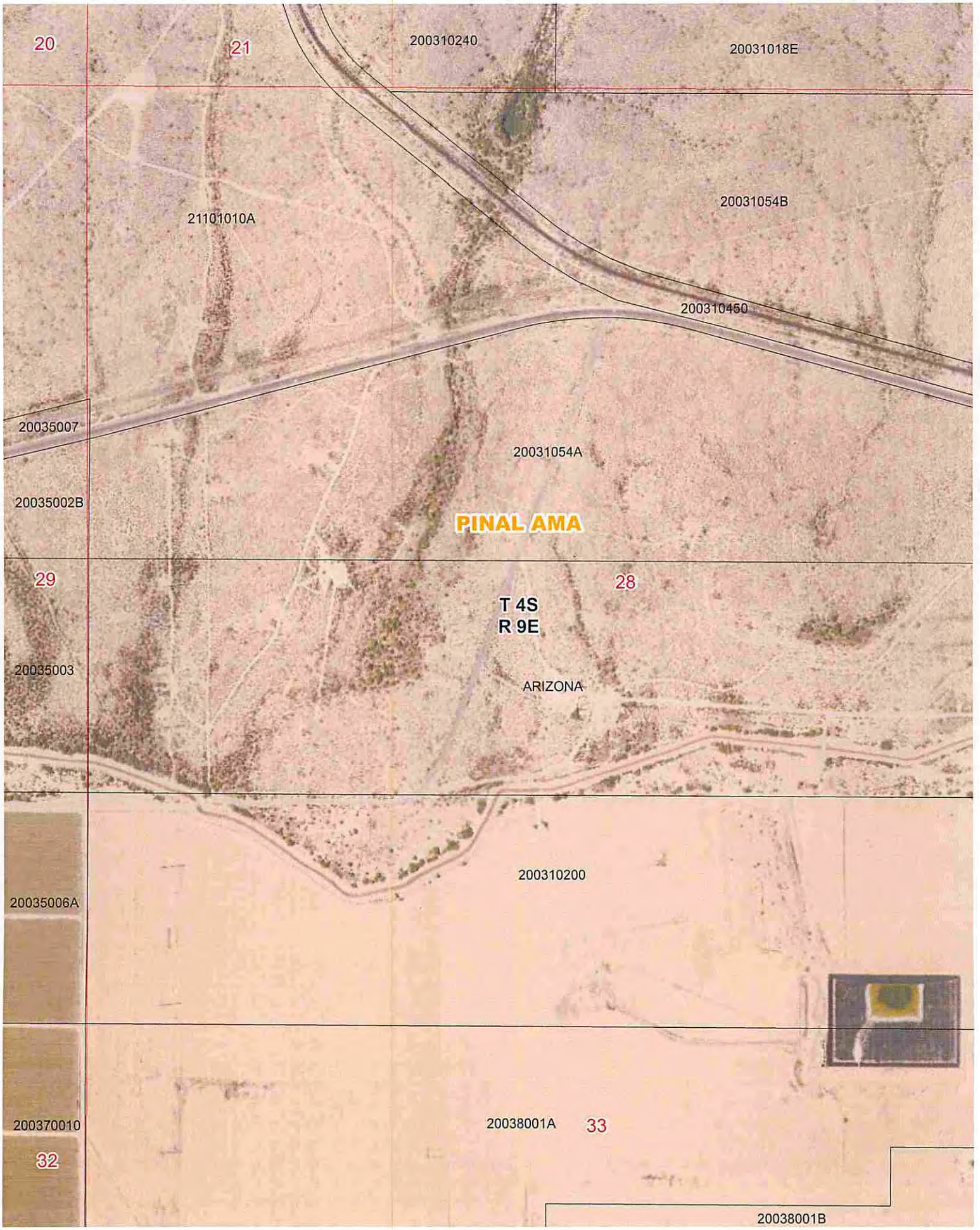
OBSERVATION WELL CONSTRUCTION DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\2014 UIC APP\FIGURES MM-3.DWG


20
21
200310240
20031018E
21101010A
20031054B
200310450
20035007
20031054A
20035002B
PINAL AMA
29
28
T 4S
R 9E
20035003
ARIZONA
200310200
20035006A
200370010
20038001A
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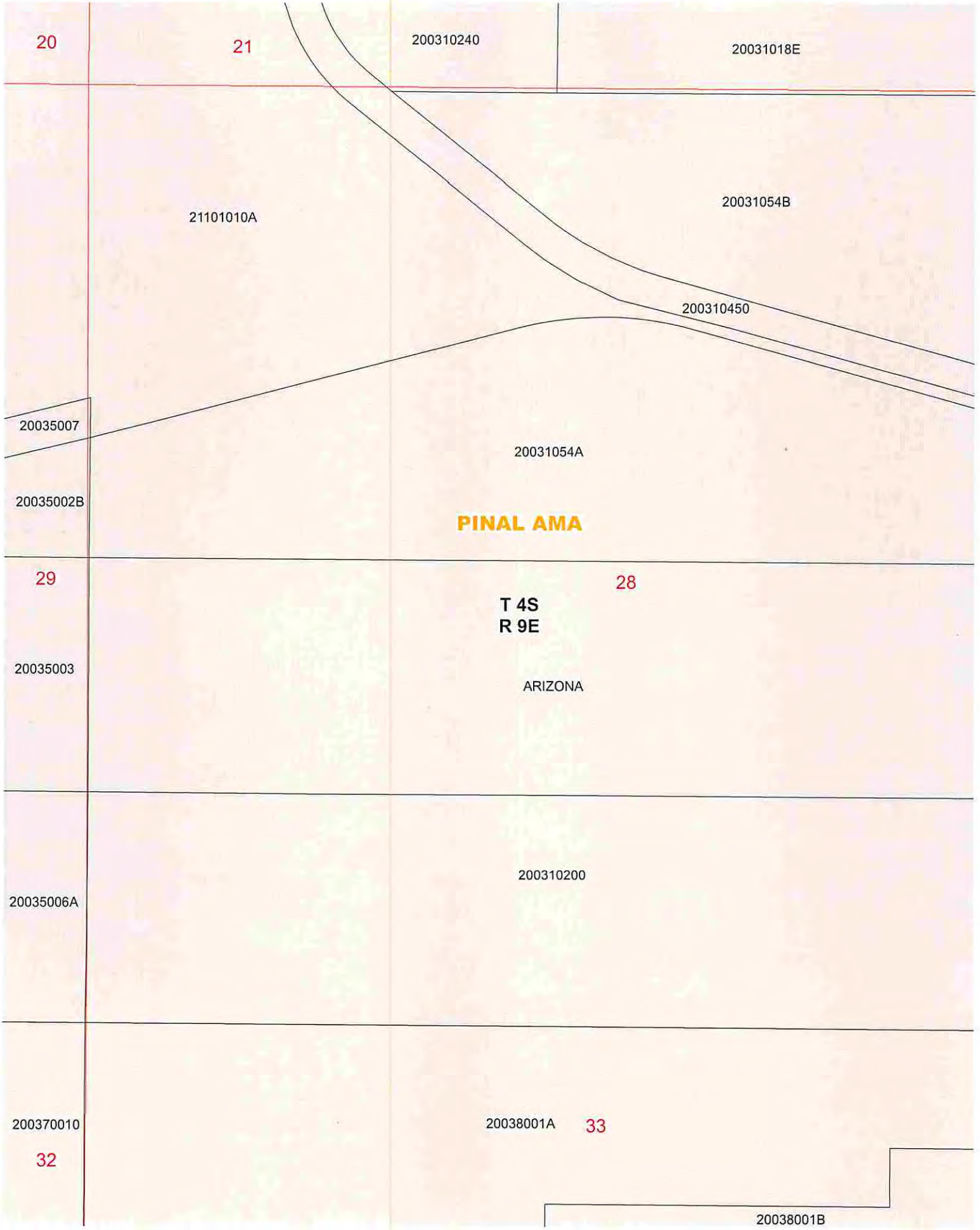
32
20038001B


20
21
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20031054A
20035002B
PINAL AMA
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28
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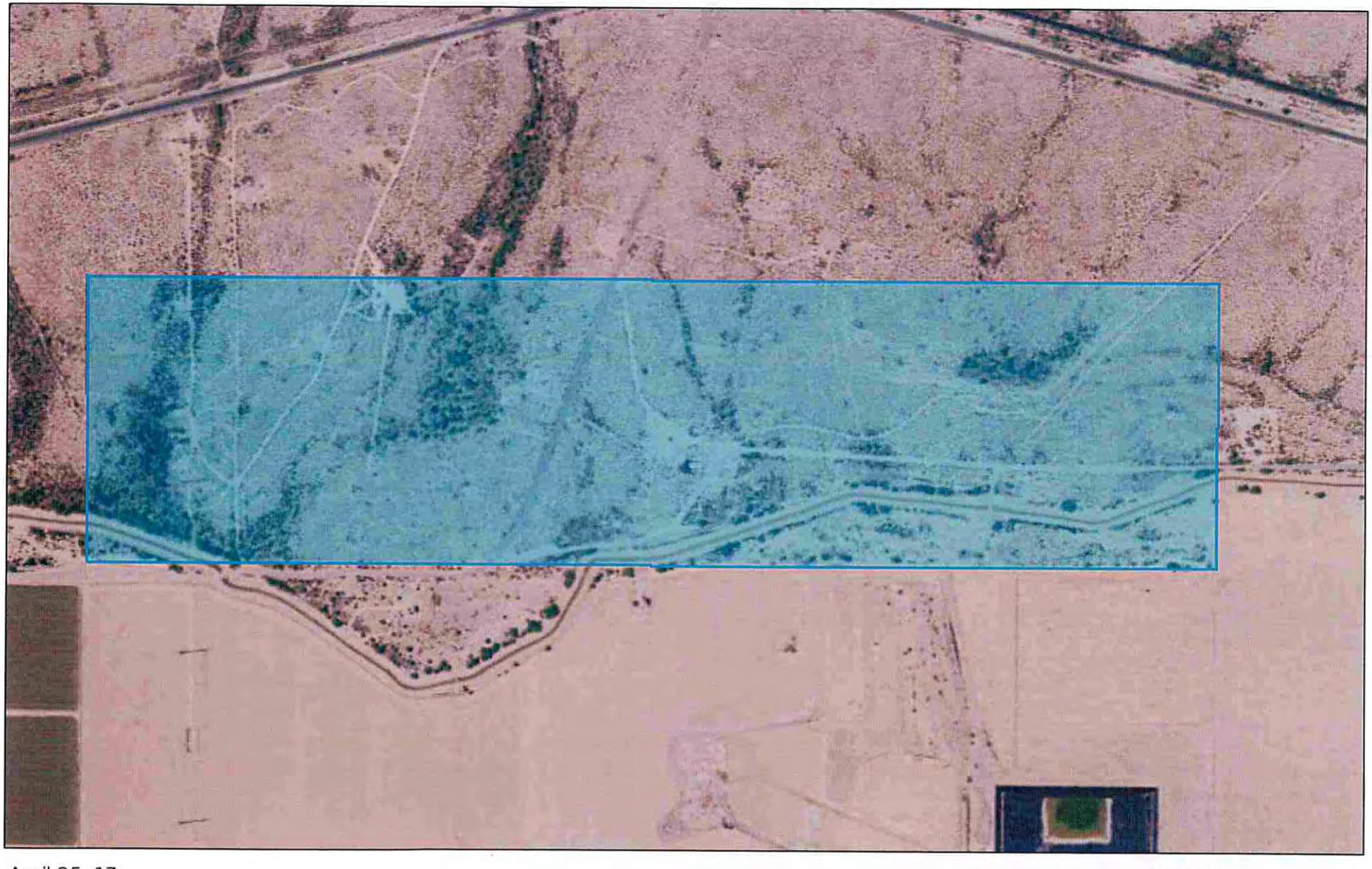
R 9E
20035003
ARIZONA
200310200
20035006A
200370010
20038001A
33
32
20038001B

Arizona State Land Department



April 25, 17

1:9,028

0 0.075 0.15 0.3 mi

0 0.1 0.2 0.4 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User

Torren Valdez

From: Justina Speas <jspeas@nationalewp.com>
Sent: Wednesday, April 26, 2017 10:10 AM
To: Torren Valdez
Subject: FW: ADWR Issue
Attachments: Rev_pg3_FRP.pdf

Please see below.

Thank you,

Justina Speas
Office Manager
National EWP, Inc.
1200 W. San Pedro St.
Gilbert, AZ 85233
480-558-3500 PH
480-798-4722 CL
480-558-3525 FX
jspeas@nationalewp.com

From: Candreva, Lauren [mailto:LCandreva@haleyaldrich.com]
Sent: Wednesday, April 26, 2017 10:05 AM
To: Justina Speas <jspeas@nationalewp.com>
Cc: Ian Ream <IanReam@florencecopper.com>
Subject: RE: ADWR Issue

Hi Justina,
Please see the attached pg 3 of the NOI form, this form will be the same for all 7 wells since it does not contain any of the well names or locations. However, it is also the page that has the signatureblock, so please confirm with your ADWR contact that it will not require a signature to complete this file.
Thanks,
Lauren

From: Justina Speas [mailto:jspeas@nationalewp.com]
Sent: Tuesday, April 25, 2017 2:09 PM
To: Candreva, Lauren <LCandreva@haleyaldrich.com>
Cc: Ian Ream <IanReam@florencecopper.com>
Subject: ADWR Issue

Good Afternoon,

I just spoke with Torren Valdez with ADWR, and he informed me of an error with some of the NOI's we just turned in. On O-01 through O-07 the well construction plan shows 0 to 500' as steel, but that is not what the diagram shows.

He said we can just fix the page with the construction plan and email him a copy, and he will put it with the file.

Justina Speas
Office Manager

National EWP, Inc.
1200 W. San Pedro St.
Gilbert, AZ 85233
480-558-3500 PH
480-798-4722 CL
480-558-3525 FX
jspeas@nationalewp.com

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 -

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
05/01/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	18
20	1210	10

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	500	5	☐	☐	☐	FRP	☒	☐	☐	☐	☐		
500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*
220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

Torren Valdez

From: Robert Harding <RHarding@azland.gov>
Sent: Tuesday, April 25, 2017 9:49 AM
To: Torren Valdez
Subject: ASLD (Landowner) Approval for NOI's - Lease #11-26500

FYI

From: Robert Harding
Sent: Wednesday, March 15, 2017 2:31 PM
To: samurillo@azwater.gov
Cc: Fred Breedlove <FBreedlove@azland.gov>; Joe Dixon <jdixon@azland.gov>; Heide Kocsis <HKocsis@azland.gov>
Subject: ASLD (Landowner) Approval for NOI's - Lease #11-26500

Stella,

As you are aware, Florence Copper is in the presence of registering a number of existing wells on State Trust Lease #11-26500 which were originally installed using single registration numbers to permit multiple monitor well installations. A number of these wells will then be permanently abandoned in accordance with Arizona Department of Water Resources (ADWR) requirements. The lessee, Florence Copper, has discussed the specifics of this registration/abandonment process with the Arizona State Land Department (ASLD), and the Department has no objection to the proposed activities.

Please accept this email as documentation of Landowner's approval for the Notice of Intent (NOI) application filings for well registration and abandonment, currently being submitted to ADWR by Florence Copper on ASLD Lease #11-26500, Section 28, T4S, R9E.

Thank you.
Best regards,

Bob Harding
Hydrologist
Water Rights Section
Arizona State land Department
602.542.2672
rharding@azland.gov

Arizona State Land Department

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> **Torren Valdez**
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 T 520-374-3984 F 520-374-3999
E ianream@florencecopper.com Web florencecopper.com

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NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

04/19/2017 11:49AM
Remittance ID
Arizona041917144729704Chr
Transaction ID:
183294013

KELSEY SHERRARD
500 Main Street
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 050257

Sale
Amount: $1,650.00

---

multiple
N/A
Cash receipts
0
dgchristiana@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature _____

click here to continue.

Printed: 4/19/2017 12:26:46 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
NATIONAL EWP
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-50968
Office: MAIN OFFICE
Receipt Date: 04/19/2017
Sale Type: Mail
Cashier: WRDGC

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR	multiple wells	11	150.00	1,650.00
						RECEIPT TOTAL:	**1,650.00**

Payment type: CREDIT CARD
Amount Paid: $1,650.00
Payment Received Date: 04/19/2017

Authorization 183294013

Notes:

No refund without valid receipt

APPENDIX B

Lithologic Log

HALEY ALDRICH

LITHOLOGIC LOG

O-03

Project	Production Test Facility, Florence, Arizona
Client	Florence Copper, Inc.
Contractor	Cascade Drilling LLC

File No. 129687
Sheet No. 1 of 15
Cadastral Location D (4-9) 28 CAC

Drilling Method	Reverse Rotary	Land Surface Elevation	1278.91 feet, amsl	Start	27 April 2017
Borehole Diameter(s)	20/12.25 in.	Datum	State Plane NAD 83	Finish	7 May 2017
Rig Make & Model	Schramm T685WS	Location	N 740,053 E 847,831	H&A Rep.	C. Price

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
0	1275	SP		**POORLY GRADED SAND (0-15 feet)** Primarily coarse sand with ~5% fines and ~5% gravel to 6 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have soft consistency, are brown (7.5YR 4/2), and have a strong reaction to HCL. **UBFU**	**Well Registry ID:** 55-227232 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 0.6 feet als *COLOR IDENTIFICATION MADE WITH WET SAMPLES USING MUNSELL CHART*
15	1260	SP	15	**POORLY GRADED SAND with GRAVEL (15-40 feet)** Primarily medium to coarse sand with ~5% fines and ~40% gravel to 12 mm. Sand and gravel is subrounded. Fines are nonplastic, have soft consistency, are brown (7.5YR 4/2), and have a strong reaction to HCL. **UBFU**	
40	1235	SC	40	**CLAYEY SAND (40-115 feet)** Primarily fine to medium sand with ~15% fines and ~10% gravel to 8 mm. Sand and gravel is subangular. Fines have medium plasticity, soft consistency, are reddish brown (5YR 4/4), and have a weak reaction to HCL. **UBFU**	**Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter Fiberglass Reinforced; 0 - 450 feet
75	1205				**Unit Intervals:** UBFU: 0 - 282 feet MGFU: 282 - 302 feet LBFU: 302 - 385 feet Oxide Bedrock: 385 - 1208 feet

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

O-03

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
75					
80	1200				
85	1195				
90	1190				
95	1185				
100	1180				**Seal:** Type V neat cement 0 - 430 feet Fine sand/bentonite 430 - 440 feet
105	1175				
110	1170				
115	1165	SW	115	**WELL GRADED SAND with GRAVEL (115-130 feet)** Primarily fine to coarse sand with ~5% fines and 15% gravel to 8 mm. Sand and gravel is subrounded. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a strong reaction to HCL. **UBFU**	
120	1160				
125	1155				
130	1150	CL	130	**SANDY LEAN CLAY (130-135 feet)** Primarily fines with ~35% sand and trace gravel to 5 mm. Sand is subrounded, gravel is subangular. Fines have medium plasticity, soft consistency, medium toughness, high dry strength, are reddish brown (5YR 4/3), and have a weak reaction to HCL. **UBFU**	
135	1145	SW	135	**WELL GRADED SAND with GRAVEL (135-145 feet)** Primarily fine to coarse sand with ~5% fines and ~15 gravel to 8 mm. Sand and gravel is subrounded. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a medium reaction to HCL. **UBFU**	
140	1140				
145	1135	CL	145	**SANDY LEAN CLAY (145-160 feet)** Primarily fines with ~35% sand and trace gravel to 5 mm. Sand is subrounded, gravel is subangular. Fines have medium plasticity, soft consistency, medium toughness, high dry strength, are reddish brown (5YR 4/3), and have a strong reaction to HCL. **UBFU**	
150	1130				
155	1125				
160	1120	SP	160	**POORLY GRADED SAND with GRAVEL (160-185 feet)** Primarily medium to coarse	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
165	1115			sand with ~5% fines and ~20% gravel to 5 mm. Sand and gravel is subangular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a medium reaction to HCL. **UBFU**	
170	1110				
175	1105				
180	1100				
185	1095	SP	185	**POORLY GRADED SAND with GRAVEL (185-282 feet)** Primarily medium to coarse sand with ~5% fines and ~25% gravel to 12 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a weak reaction to HCL. **UBFU**	
190	1090				
195	1085				
200	1080				
205	1075				
210	1070				
215	1065				
220	1060				
225	1055				
230	1050				
235	1045				
240	1040				
245	1035				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
250	1030				**ACD Sensor Depths:** 277, 280 feet
255	1025				
260	1020				
265	1015				
270	1010				
275	1005				
280	1000				
285	995	CH	282	**FAT CLAY with SAND (282-302 feet)** Primarily fines with ~25% sand and trace gravel to 5 mm. Sand is subrounded, gravel is subangular. Fines have high plasticity, soft consistency, high toughness, high dry strength, are reddish brown (5YR 4/3), and have a medium reaction to HCL. **MFGU**	
290	990				
295	985				
300	980				
305	975	SW	302	**WELL GRADED SAND with GRAVEL (302-385 feet)** Primarily fine to coarse sand with ~5% fines and ~20% gravel to 6 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 5/4), and have a strong reaction to HCL. **LBFU**	
310	970				
315	965				
320	960				
325	955				
330	950				
335	945				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
340	940				**CS Sensor Depths:** 340, 350, 360, 370, 380, 390, 400, 410 feet
345	935				
350	930				
355	925				
360	920				
365	915				
370	910				
375	905				
380	900				
385	895		385	**QUARTZ MONZONITE (385-400 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Few Cu minerals 395-400 feet.	
390	890				
395	885				
400	880		400	**GRANODIORITE (400-420 feet)**Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.	
405	875				
410	870				
415	865				
420	860		420	**QUARTZ MONZONITE (420-615 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
425	855			approximately 5%. Cu minerals 440-500. Increase in clay 510-535, 540-550. Cu minerals sparse 535-605.	
430	850				
435	845				
440	840				**Filter Pack:** 8 - 12 CO Silica Sand; 440 - 1208 feet **Thread Adapter:** Stainless Steel, SCH 80 F480 PVC to API; 450 feet
445	835				
450	830				**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 450 - 1201 feet **ERT Sensor Depths:** 524, 599, 675, 750, 825, 901, 976, 1051, 1125, 1200 feet
455	825				
460	820				
465	815				
470	810				
475	805				
480	800				
485	795				
490	790				
495	785				
500	780		500	**QUARTZ MONZONITE (420-615 feet)**Continued.	
505	775				
	770				

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

HALEY ALDRICH

LITHOLOGIC LOG

O-03

File No. 129687
Sheet No. 7 of 15

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
510					
	765				
515					
	760				
520					
	755				
525					
	750				
530					
	745				
535					
	740				
540					
	735				
545					
	730				
550					
	725				
555					
	720				
560					
	715				
565					
	710				
570					
	705				
575					
	700				
580					
	695				
585					
	690				
590					
	685				
595					

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

O-03

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
600	680		596	**QUARTZ MONZONITE (420-615 feet)**Continued.	
605	675				
610	670				
615	665		615	**GRANODIORITE (615-675 feet)**Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%. Abundant Cu minerals 615-675.	
620	660				
625	655				
630	650				
635	645				
640	640				
645	635				
650	630				
655	625				
660	620				
665	615				
670	610				
675	605		675	**QUARTZ MONZONITE (675-855 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present throughout.	
680	600				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
685	595				
690	590				
695	585		695	**QUARTZ MONZONITE (675-855 feet)**Continued.	
700	580				
705	575				
710	570				
715	565				
720	560				
725	555				
730	550				
735	545				
740	540				
745	535				
750	530				
755	525				
760	520				
765	515				
	510				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
770	505		770	**QUARTZ MONZONITE (675-855 feet)**Continued.	
775	500				
780	495				
785	490				
790	485				
795	480				
800	475				
805	470				
810	465				
815	460				
820	455				
825	450				
830	445				
835	440				
840	435				
845	430				
850	425				
855			855	**DIABASE (855-875 feet)**Dark gray to black igneous rock. Chrysocolla 850-860.	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
860	420				
865	415				
870	410				
875	405		875	**QUARTZ MONZONITE (875-910 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present throughout.	
880	400				
885	395				
890	390				
895	385				
900	380				
905	375				
910	370		910	**DIABASE (910-925 feet)**Dark gray to black igneous rock.	
915	365				
920	360				
925	355		925	**QUARTZ MONZONITE (925-1090 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals 925-960, 975-1020, 1050-1090.	
930	350				
935	345				
940	340		943		

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
945	335			**QUARTZ MONZONITE (925-1090 feet)**Continued.	
950	330				
955	325				
960	320				
965	315				
970	310				
975	305				
980	300				
985	295				
990	290				
995	285				
1000	280				
1005	275				
1010	270				
1015	265				
1020	260				
1025	255				
	250				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
1030			1030	**QUARTZ MONZONITE (925-1090 feet)**Continued.	
1035	245				
1040	240				
1045	235				
1050	230				
1055	225				
1060	220				
1065	215				
1070	210				
1075	205				
1080	200				
1085	195				
1090	190		1090	**DIABASE (1090-1125 feet)**Dark gray to black igneous rock.	
1095	185				
1100	180				
1105	175				
1110	170				
1115	165				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
			1117	**DIABASE (1090-1125 feet)**Continued.	
1120	160				
	155		1125	**QUARTZ MONZONITE (1125-1208 feet)**Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present throughout.	
1125					
1130	150				
1135	145				
1140	140				
1145	135				
1150	130				
1155	125				
1160	120				
1165	115				
1170	110				
1175	105				
1180	100				
1185	95				
1190	90				
1195	85				
1200	80				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
1205	75		1204	**QUARTZ MONZONITE (1125-1208 feet)**Continued.	
			1208		**Total Borehole Depth:** Driller = 1208 feet; Geophysical Logging = 1203 feet

APPENDIX C

Chemical Characteristics of Formation Water

May 23, 2018

Barbara Sylvester
Brown & Caldwell
201 E. Washington Suite 500
Phoenix, AZ 85004

TEL (602) 567-3894
FAX -

Work Order No.: 18D0619
Order Name: Florence Copper

RE: PTF

Dear Barbara Sylvester,

Turner Laboratories, Inc. received 2 sample(s) on 04/25/2018 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Kevin Brim
Project Manager

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Order: Florence Copper

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
18D0619-01	R-09	Ground Water	04/23/2018 1555
18D0619-02	TB	Ground Water	04/25/2018 0000

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Case Narrative

The 8015D analysis was performed by TestAmerica Laboratories, Inc. in Phoenix, AZ.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

D5	Minimum Reporting Limit (MRL) is adjusted due to sample dilution; analyte was non-detect in the sample.
H5	This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND	Not Detected at or above the PQL
PQL	Practical Quantitation Limit
DF	Dilution Factor
PRL	Project Reporting Limit

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
ICP Dissolved Metals-E 200.7 (4.4)									
Calcium	140		4.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Iron	ND		0.30		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Magnesium	27		3.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Potassium	6.8		5.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Sodium	170		5.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.0800	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Antimony	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Arsenic	0.0016		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Barium	0.071		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Beryllium	ND		0.00050	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Cadmium	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Chromium	0.0051		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Cobalt	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Copper	0.011		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Lead	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Manganese	0.0020		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Nickel	0.0033		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Selenium	ND		0.0025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Thallium	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Zinc	ND		0.040		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
CVAA Dissolved Mercury-E 245.1									
Mercury	ND		0.0010		mg/L	1	04/26/2018 0955	04/26/2018 1639	MH
pH-E150.1									
pH (pH Units)	7.8			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
Temperature (°C)	22			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
ICP/MS Total Metals-E200.8 (5.4)									
Uranium	0.016		0.00050		mg/L	1	04/27/2018 1230	04/30/2018 1348	MH

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	310		25		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Fluoride	ND		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrate (As N)	8.8		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Sulfate	190		130		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Cyanide-E335.4									
Cyanide	ND		0.10		mg/L	1	04/26/2018 0845	04/30/2018 1545	AP
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Total (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Specific Conductance-SM2510 B									
Conductivity	1700		0.20		µmhos/cm	2	05/09/2018 1315	05/09/2018 1330	AP
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	1000		20		mg/L	1	04/26/2018 0826	05/01/2018 1600	EJ
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Surr: 4-Bromofluorobenzene	*95*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Toluene-d8	*77*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-02

Client Sample ID: TB
Collection Date/Time: 04/25/2018 0000
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Dibromofluoromethane	*110*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Toluene-d8	*103*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804269 - E 245.1										
Blank (1804269-BLK1)				Prepared & Analyzed: 04/26/2018						
Mercury	ND	0.0010	mg/L							
LCS (1804269-BS1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0049	0.0010	mg/L	0.005000		98	85-115			
LCS Dup (1804269-BSD1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0048	0.0010	mg/L	0.005000		95	85-115	2	20	
Matrix Spike (1804269-MS1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	97	85-115			
Matrix Spike Dup (1804269-MSD1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	96	85-115	1	20	
Batch 1804292 - E200.8 (5.4)										
Blank (1804292-BLK1)				Prepared & Analyzed: 04/30/2018						
Uranium	ND	0.00050	mg/L							
LCS (1804292-BS1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115			
LCS Dup (1804292-BSD1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115	0.2	20	
Matrix Spike (1804292-MS1)		**Source: 18D0614-01**		Prepared & Analyzed: 04/30/2018						
Uranium	0.051	0.00050	mg/L	0.05000	0.0015	99	70-130			
Batch 1805051 - E 200.7 (4.4)										
Blank (1805051-BLK1)				Prepared & Analyzed: 05/04/2018						
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (1805051-BS1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		109	85-115			
Iron	1.0	0.30	mg/L	1.000		104	85-115			
Magnesium	10	3.0	mg/L	10.00		105	85-115			
Potassium	10	5.0	mg/L	10.00		105	85-115			
Sodium	10	5.0	mg/L	10.00		105	85-115			
LCS Dup (1805051-BSD1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		110	85-115	1	20	
Iron	1.0	0.30	mg/L	1.000		105	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		105	85-115	0.06	20	
Potassium	10	5.0	mg/L	10.00		105	85-115	0.05	20	
Sodium	11	5.0	mg/L	10.00		109	85-115	4	20	

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805051 - E 200.7 (4.4)										
Matrix Spike (1805051-MS1)	**Source: 18D0619-01**			Prepared & Analyzed: 05/04/2018						
Calcium	150	4.0	mg/L	10.00	140	59	70-130			M3
Iron	1.1	0.30	mg/L	1.000	0.028	105	70-130			
Magnesium	38	3.0	mg/L	10.00	27	108	70-130			
Potassium	17	5.0	mg/L	10.00	6.8	105	70-130			
Sodium	170	5.0	mg/L	10.00	170	30	70-130			M3
Matrix Spike (1805051-MS2)	**Source: 18E0021-01**			Prepared & Analyzed: 05/04/2018						
Calcium	64	4.0	mg/L	10.00	54	103	70-130			
Iron	1.0	0.30	mg/L	1.000	0.0060	101	70-130			
Magnesium	21	3.0	mg/L	10.00	11	99	70-130			
Potassium	15	5.0	mg/L	10.00	4.7	104	70-130			
Sodium	99	5.0	mg/L	10.00	90	87	70-130			
Batch 1805069 - E 200.8 (5.4)										
Blank (1805069-BLK1)				Prepared & Analyzed: 05/07/2018						
Aluminum	ND	0.0400	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Thallium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (1805069-BS1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.104	0.0400	mg/L	0.1000		104	85-115			
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115			
Arsenic	0.050	0.00050	mg/L	0.05000		100	85-115			
Barium	0.050	0.00050	mg/L	0.05000		100	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115			
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		101	85-115			
Copper	0.051	0.00050	mg/L	0.05000		103	85-115			
Lead	0.049	0.00050	mg/L	0.05000		98	85-115			
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115			
Nickel	0.051	0.00050	mg/L	0.05000		102	85-115			
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115			
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115			
Zinc	0.10	0.040	mg/L	0.1000		101	85-115			

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805069 - E 200.8 (5.4)										
LCS Dup (1805069-BSD1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.115	0.0400	mg/L	0.1000		115	85-115	10	20	
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115	0.7	20	
Arsenic	0.050	0.00050	mg/L	0.05000		101	85-115	0.8	20	
Barium	0.051	0.00050	mg/L	0.05000		102	85-115	1	20	
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115	0.2	20	
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115	0.2	20	
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115	0.4	20	
Cobalt	0.050	0.00025	mg/L	0.05000		101	85-115	0.5	20	
Copper	0.052	0.00050	mg/L	0.05000		105	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	0.1	20	
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115	0.09	20	
Nickel	0.051	0.00050	mg/L	0.05000		103	85-115	0.8	20	
Selenium	0.052	0.0025	mg/L	0.05000		104	85-115	2	20	
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115	0.06	20	
Zinc	0.10	0.040	mg/L	0.1000		104	85-115	3	20	
Matrix Spike (1805069-MS1)		**Source: 18D0693-01**		Prepared & Analyzed: 05/07/2018						
Aluminum	0.239	0.0400	mg/L	0.1000	0.166	74	70-130			
Antimony	0.045	0.00050	mg/L	0.05000	0.00024	90	70-130			
Arsenic	0.056	0.00050	mg/L	0.05000	0.0035	104	70-130			
Barium	0.16	0.00050	mg/L	0.05000	0.12	94	70-130			
Beryllium	0.045	0.00025	mg/L	0.05000	0.000029	90	70-130			
Cadmium	0.047	0.00025	mg/L	0.05000	ND	94	70-130			
Chromium	0.049	0.00050	mg/L	0.05000	0.00052	98	70-130			
Cobalt	0.048	0.00025	mg/L	0.05000	0.00097	95	70-130			
Copper	0.051	0.00050	mg/L	0.05000	0.0020	98	70-130			
Lead	0.047	0.00050	mg/L	0.05000	0.00016	94	70-130			
Manganese	0.054	0.00025	mg/L	0.05000	0.0075	94	70-130			
Nickel	0.049	0.00050	mg/L	0.05000	0.0018	94	70-130			
Selenium	0.057	0.0025	mg/L	0.05000	ND	114	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.000038	96	70-130			
Zinc	0.11	0.040	mg/L	0.1000	ND	109	70-130			

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QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804261 - SM2540 C										
Duplicate (1804261-DUP1)		**Source: 18D0606-01**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	630	20	mg/L		630			0.3	5	
Duplicate (1804261-DUP2)		**Source: 18D0606-02**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	610	20	mg/L		620			0.8	5	
Batch 1804268 - E335.4										
Blank (1804268-BLK1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	ND	0.10	mg/L							
LCS (1804268-BS1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110			
LCS Dup (1804268-BSD1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110	0.1	20	
Matrix Spike (1804268-MS1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.1	0.10	mg/L	2.000	ND	103	90-110			
Matrix Spike Dup (1804268-MSD1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000	ND	98	90-110	5	20	
Batch 1804272 - E150.1										
Duplicate (1804272-DUP1)		**Source: 18D0662-02**		Prepared & Analyzed: 04/26/2018						
pH (pH Units)	7.8		-		7.8			0.1	200	H5
Temperature (°C)	21		-		21			2	200	H5
Batch 1805027 - SM2320B										
LCS (1805027-BS1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110			
LCS Dup (1805027-BSD1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110	0	10	
Matrix Spike (1805027-MS1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	96	85-115			
Matrix Spike Dup (1805027-MSD1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	95	85-115	0.5	10	
Batch 1805103 - SM2510 B										
LCS (1805103-BS1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200			
LCS Dup (1805103-BSD1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200	0.7	200	
Duplicate (1805103-DUP1)		**Source: 18E0192-01**		Prepared & Analyzed: 05/09/2018						
Conductivity	4.0	0.10	µmhos/cm		4.0			0	10	

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805074 - SW8260B										
Blank (1805074-BLK1)				Prepared & Analyzed: 05/07/2018						
Benzene	ND	0.50	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Ethylbenzene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
Xylenes, Total	ND	1.5	ug/L							
Surrogate: 4-Bromofluorobenzene	*25.0*		*ug/L*	*25.00*		*100*	*70-130*			
Surrogate: Dibromofluoromethane	*26.9*		*ug/L*	*25.00*		*107*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
LCS (1805074-BS1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	29		ug/L	25.00		114	70-130			
Benzene	27		ug/L	25.00		109	70-130			
Chlorobenzene	29		ug/L	25.00		115	70-130			
Toluene	25		ug/L	25.00		101	70-130			
Trichloroethene	26		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	*24.6*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*25.6*		*ug/L*	*25.00*		*102*	*70-130*			
Surrogate: Toluene-d8	*24.8*		*ug/L*	*25.00*		*99*	*70-130*			
LCS Dup (1805074-BSD1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00		110	70-130	4	30	
Benzene	26		ug/L	25.00		104	70-130	5	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	9	30	
Toluene	24		ug/L	25.00		96	70-130	5	30	
Trichloroethene	25		ug/L	25.00		98	70-130	4	30	
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.1*		*ug/L*	*25.00*		*104*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike (1805074-MS1)	**Source: 18D0582-02**			Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	109	70-130			
Benzene	26		ug/L	25.00	0.020	104	70-130			
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130			
Toluene	27		ug/L	25.00	3.5	95	70-130			
Trichloroethene	24		ug/L	25.00	0.040	97	70-130			
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*24.9*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike Dup (1805074-MSD1)	**Source: 18D0582-02**			Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	108	70-130	0.8	30	
Benzene	25		ug/L	25.00	0.020	101	70-130	2	30	
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130	0.3	30	
Toluene	27		ug/L	25.00	3.5	95	70-130	0.1	30	
Trichloroethene	24		ug/L	25.00	0.040	95	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/L*	*25.00*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*25.3*		*ug/L*	*25.00*		*101*	*70-130*			

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804245 - E300.0 (2.1)										
Blank (1804245-BLK1)				Prepared & Analyzed: 04/25/2018						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (1804245-BS1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		92	90-110			
Fluoride	2.0	0.50	mg/L	2.000		101	90-110			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000		95	90-110			
Nitrogen, Nitrite (As N)	2.3	0.10	mg/L	2.500		92	90-110			
Sulfate	12	5.0	mg/L	12.50		96	90-110			
LCS Dup (1804245-BSD1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		94	90-110	2	10	
Fluoride	2.0	0.50	mg/L	2.000		101	90-110	0.4	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		98	90-110	3	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		95	90-110	3	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	3	10	
Matrix Spike (1804245-MS1)		**Source: 18D0613-08**		Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	89	80-120			
Matrix Spike (1804245-MS2)		**Source: 18D0625-01**		Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.46	92	80-120			
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120			
Matrix Spike (1804245-MS3)		**Source: 18D0614-01RE1**		Prepared & Analyzed: 04/26/2018						
Chloride	17		mg/L	12.50	6.4	88	80-120			
Sulfate	28		mg/L	12.50	18	85	80-120			
Matrix Spike Dup (1804245-MSD1)		**Source: 18D0613-08**		Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120	0.4	10	
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	90	80-120	0.6	10	
Matrix Spike Dup (1804245-MSD2)		**Source: 18D0625-01**		Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000	0.46	92	80-120	0.2	10	
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120	0.4	10	
Matrix Spike Dup (1804245-MSD3)		**Source: 18D0614-01RE1**		Prepared & Analyzed: 04/26/2018						
Chloride	18		mg/L	12.50	6.4	89	80-120	0.6	10	
Sulfate	29		mg/L	12.50	18	86	80-120	0.6	10	

TURNER LABORATORIES INC.

2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 18D0619 DATE 4/23/18 PAGE 1 OF 1

PROJECT NAME Florence Copper #

CONTACT NAME: Barb Sylvester

COMPANY NAME: Brown and Caldwell

ADDRESS: 2 N Central Ave, Suite 1600

CITY Phoenix STATE AZ ZIP CODE 85004

PHONE 602-567-3894 FAX

SAMPLER'S SIGNATURE [signature]

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Diss Metals - list (Field Filtered)	Total Uranium (not Filtered)	Inorganics - list	Cyanide (free)	Organics - list	G.Alpha, (RadSafety sub)	Uranium activity if G. Alpha >12	Ra226, 228, Ra-Tot (RadsSafety)	TPH-D (TestAmerica Sub)											
R-09	4-23-18	1555		GW	10	X	X	X	X	X	X	X	X	X											
8260 TB	4-23-18	1600		GW	1					X															
				GW																					
				GW																					
				GW																					
				GW																					
				GW																					
				GW																					
				GW																					
				GW																					
				GW																					

1. RELINQUISHED BY:
Signature [signature]
Printed Name
Firm
Date/Time 4-23-18 1630

2. RECEIVED BY: UPS
Signature
Printed Name
Firm
Date/Time

3. RELINQUISHED BY: UPS
Signature
Printed Name
Firm
Date/Time

4. RECEIVED BY:
Signature [signature]
Printed Name Joseph Catalano
Firm TURNER LABORATORIES INC.
Date/Time 4/23/18 1006

TURNAROUND REQUIREMENTS:
X Standard (approx10 days)*
___ Next day ___ 2 Day ___ 5 Day*
___ Email Preliminary Results To:
* Working Days

*LEGEND
DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

REPORT REQUIREMENTS:
X I. Routine Report
___ II. Report (includes DUP,MS,MSD, as required, may be charged as samples)
___ III. Date Validation Report (Includes All Raw Data)
Add 10% to invoice

INVOICE INFORMATION:
Account X Y ___ N
P.O. #
Bill to: Florence Copper

SAMPLE RECEIPT:
Total Containers
Temperature 2.2
☑ Wet Ice ☐ Blue Ice

SPECIAL INSTRUCTIONS/COMMENTS:

Compliance Analysis: ☐ Yes ☐ No	Custody Seals ☐	Preservation Confirmation ☒
ADEQ Forms: ☐ Yes ☐ No	Container Intact ☒	Appropriate Head Space ☒
Mail ADEQ Forms: ☐ Yes ☐ No	COC/Labels Agree ☒	Received Within Hold Time ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-101943-1
Client Project/Site: 18D0619

For:
Turner Laboratories, Inc.
2445 North Coyote Drive
Suite 104
Tucson, Arizona 85745

Attn: Kevin Brim

Authorized for release by:
5/16/2018 12:23:25 PM

Ken Baker, Project Manager II
(602)659-7624
ken.baker@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Q9	Insufficient sample received to meet method QC requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-101943-1

Comments
No additional comments.

Receipt
The sample was received on 4/27/2018 10:50 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

GC Semi VOA
Method(s) 8015D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD) associated with preparation batch 550-145985 and analytical batch 550-146884. Affected samples have been added a Q9 qualifier. 18D0619-01 (550-101943-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-101943-1	18D0619-01	Water	04/23/18 15:55	04/27/18 10:50

Detection Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01

Lab Sample ID: 550-101943-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
ORO (C22-C32)	0.21	Q9	0.20		mg/L	1		8015D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01
Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1
Matrix: Water

Method: 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	0.21	Q9	0.20		mg/L		04/30/18 14:16	05/10/18 23:29	1
DRO (C10-C22)	ND	Q9	0.10		mg/L		04/30/18 14:16	05/10/18 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*79*		*10 - 150*	*04/30/18 14:16*	*05/10/18 23:29*	*1*

Surrogate Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OTPH (10-150)							
550-101943-1	18D0619-01	79							
LCS 550-145985/2-A	Lab Control Sample	79							
LCSD 550-145985/3-A	Lab Control Sample Dup	79							
MB 550-145985/1-A	Method Blank	65							

Surrogate Legend

OTPH = o-Terphenyl (Surr)

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 550-145985/1-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 145985

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	ND		0.20		mg/L		04/30/18 14:15	05/11/18 11:16	1
DRO (C10-C22)	ND		0.10		mg/L		04/30/18 14:15	05/11/18 11:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*65*		*10 - 150*	*04/30/18 14:15*	*05/11/18 11:16*	*1*

Lab Sample ID: LCS 550-145985/2-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
ORO (C22-C32)			1.60	1.59		mg/L		99	69 - 107		
DRO (C10-C22)			0.400	0.450		mg/L		113	42 - 133		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

Lab Sample ID: LCSD 550-145985/3-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
ORO (C22-C32)			1.60	1.59		mg/L		100	69 - 107	0	20
DRO (C10-C22)			0.400	0.447		mg/L		112	42 - 133	1	22

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

QC Association Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

GC Semi VOA

Prep Batch: 145985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	3510C	
MB 550-145985/1-A	Method Blank	Total/NA	Water	3510C	
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 146884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	8015D	145985
MB 550-145985/1-A	Method Blank	Total/NA	Water	8015D	145985
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	8015D	145985
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	8015D	145985

Lab Chronicle

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01
Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			145985	04/30/18 14:16	REM	TAL PHX
Total/NA	Analysis	8015D		1	146884	05/10/18 23:29	TC1	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Accreditation/Certification Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arizona	State Program	9	AZ0728	06-09-18

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method	Method Description	Protocol	Laboratory
8015D	Diesel Range Organics (DRO) (GC)	SW846	TAL PHX
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PHX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

SUBCONTRACT ORDER

Turner Laboratories, Inc.

101943

18D0619

SENDING LABORATORY:	RECEIVING LABORATORY:
Turner Laboratories, Inc.	TestAmerica Phoenix
2445 N. Coyote Drive, Ste #104	4625 East Cotton Center Boulevard Suite 189
Tucson, AZ 85745	Phoenix, AZ 85540
Phone: 520.882.5880	Phone :(602) 437-3340
Fax: 520.882.9788	Fax:
Project Manager: Kevin Brim	Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
-01			
Sample ID: 18D0619-01 Drinking Water	**Sampled:04/23/2018 15:55**		
8015D Sub	04/30/2018 15:55		8015D DRO and ORO Paramaters Only
Containers Supplied:			

8015D Sub
o-Terphenyl
C10-C32 (Total)
C22-C32 (Oil Range Organics)
C10-C22 (Diesel Range Organics)
C6-C10 (Gasoline Range Organics)

550-101943 Chain of Custody

3,8°C UPS GR

TA-PHX

Released By	Date	Received By	Date
	4/24/18		4-27-18 1050
Released By	Date	Received By	Date

Login Sample Receipt Checklist

Client: Turner Laboratories, Inc.

Job Number: 550-101943-1

Login Number: 101943
List Number: 1
Creator: Gravlin, Andrea

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Analysis Completed: May 22, 2018

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
18D0619-01	17.7 ± 0.9	12.9 ± 1.2	4.8 ± 1.5	3.1 ± 0.3	3.1 ± 0.4	6.2 ± 0.5
Date of Analysis	5/2/2018	5/21/2018	5/21/2018	5/4/2018	5/4/2018	5/4/2018

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Laboratory License Number AZ0462 Date

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Uranium Analysis Date: May 21, 2018

Sample No.	^{238}U	^{235}U	^{234}U	Total	
18D0619-01	6.0 ± 0.6	0.280 ± 0.004	6.6 ± 0.6	12.9 ± 1.2	Activity (pCi/L)
	17.9 ± 1.7	0.131 ± 0.002	0.00106 ± 0.00010	18.0 ± 1.7	Content (µg/L)
	Comments:				

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality

Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report

Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

April 23, 2018 (Sample Date) 15:55 (Sample Time) (24 hour clock) _____ (Owner/Contact Person)

_____ (Owner/Contact Fax Number) _____ (Owner/Contact Phone Number)

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring — Date Q1 collected: _____

☐ Quarterly — Date Q2 collected: _____

☐ Composite of four quarterly samples — Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result		Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	5/21/2018	4.8 ± 1.5		
600/00-02		3 pCi/L	Gross Alpha	4002	5/2/2018	17.7 ± 0.9		
7500 - Rn			Radon	4004				
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	5/21/2018	18.0 ± 1.7	µg/L	
			Uranium 234	4007	5/21/2018	0.00106 ± 0.00010		
			Uranium 235	4008	5/21/2018	0.131 ± 0.002		
			Uranium 238	4009	5/21/2018	17.9 ± 1.7		
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	5/4/2018	6.2 ± 0.5		X
GammaRay HPGE		1 pCi/L	Radium 226	4020	5/4/2018	3.1 ± 0.3		
GammaRay HPGE		1 pCi/L	Radium 228	4030	5/4/2018	3.1 ± 0.4		

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE60312

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 18D0619-01

Authorized Signature: Robt L. Metzger

Date Public Water System Notified: _____

DWAR 6: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

18D0619

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Kevin Brim

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone :(480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 18D0619-01 Drinking Water Sampled:04/23/2018 15:55			
Radiochemistry, Gross Alpha	10/20/2018 15:55		Analyze Uranium and Adjusted Alpha if G. Alpha is > 12
Radiochemistry, Radium 226/228	05/23/2018 15:55		
Containers Supplied:			

H 60312

Released By	Date	Received By	Date
[signature]	4/30/18 16:00	UPS	4/30/18 16:00
Released By	Date	Received By	Date

APPENDIX D

Well Completion Documentation

PIPE TALLY for

Project Name.: FCI	Project No.: 129687-002
Well ID: O-03	Date: 5-6-17
Location:	Staff: C. Giusti C Price

Type of Connections: ☐ Welded ☒ T+C ☐ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
1	✓	0.54	0.54	PVC-Cap
2	✓ ✱	10.03	10.57	PVC Screen
3	✓	20.02	30.59	
4	✱	20.03	50.62	
5	✓	20.02	70.64	
6	✱	20.02	90.66	
7	✓	20.02	110.68	
8	✱	20.02	130.70	
9	✓	20.01	150.71	
10	✱	20.03	170.74	
11	✓	20.03	190.77	
12	✱	20.01	210.78	
13	✓	20.03	230.81	
14	✱	20.02	250.83	
15	✓	20.02	270.85	
16	✱	20.02	290.87	
17	✓	20.02	310.89	
18	✱	20.01	330.90	
19	✓	20.02	350.92	
20	✱	20.03	370.95	
21	✓	20.01	390.96	
22	✱	20.01	410.97	
23	✓	20.02	430.99	
24	✱	20.02	451.01	
25	✓	20.02	471.03	
26	✱	20.02	491.05	
27	✓	20.03	511.08	
28	✓	20.02	531.10	
29	✱ ✱	20.03	551.13	
30	✱	20.02	571.15	
31	✓	20.02	591.17	
32	✱	20.02	611.19	↓

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
33	✓	20.03	631.22	PVC-Screen
34	✱	20.03	651.25	↓
35	✓	20.03	671.28	
36	✱	20.03	691.31	
37	✓	20.03	711.34	
38	✱	20.01	731.35	
39	✓	20.01	751.36	↓
40	✓	0.50	751.86	ADAPTER
41	✱	29.10	780.96	FRP CASING
42	✓	29.05	810.01	
43	✱	29.12	839.13	
44	✓	29.06	868.19	
45	✱	29.11	897.3	
46	✓	29.07	926.37	
47	✱	29.06	955.43	
48	✓	29.02	984.45	
49	✱	29.01	1013.46	
50	✓	29.01	1042.47	
51	✱	29.05	1071.52	
52	✓	28.96	1100.48	
53	✱	29.05	1129.53	
54	✓	29.16	1158.69	
55	✱	28.96	1187.65	
56	✓	5.14	1192.79	
57	✱	10.15	1202.94	↓

SUMMARY OF TALLY

Total length of casing/screen tallied (ft.):	1202.94
Length of casing cut off after landing (ft.):	
Stick up (ft, als):	1.58
Bottom of Well (feet, bls):	1201.36
Screened Interval(s):	1201.36 - 450.00
Total feet of screen in hole (ft.):	751.36

Notes:

✱ = centralizer @ top of joint.

✱✱ CENTRALIZER PLACED @ BOTTOM OF PIPE #29 TO AVOID SENSOR #3

6.27 0.55+

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: FCI **Project #.:** 129687-005 **Date:** FCI 5-6-17
Well No.: O-03 **Geologist:** C. GUST I, KFORD, SHENSEL

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]:	1208	feet	Total Cased Depth:		feet
Borehole Diameter [D]:	12.25	inches	Rat Hole Volume [R=(D^2) 0.005454*L_r]:	5.43	Ft^3
Screen Length [L_s]:	751.36	feet	Rat Hole Length [L_r]	6.64	feet
Screen Diameter [d_s]:	5.56	inches	Camera Tube Length [L_{ct}]	—	feet
Casing Length [L_c]		feet	Camera Tube Diameter [d_{ct}]	—	inches
Casing Diameter [d_c]	5.31	inches			

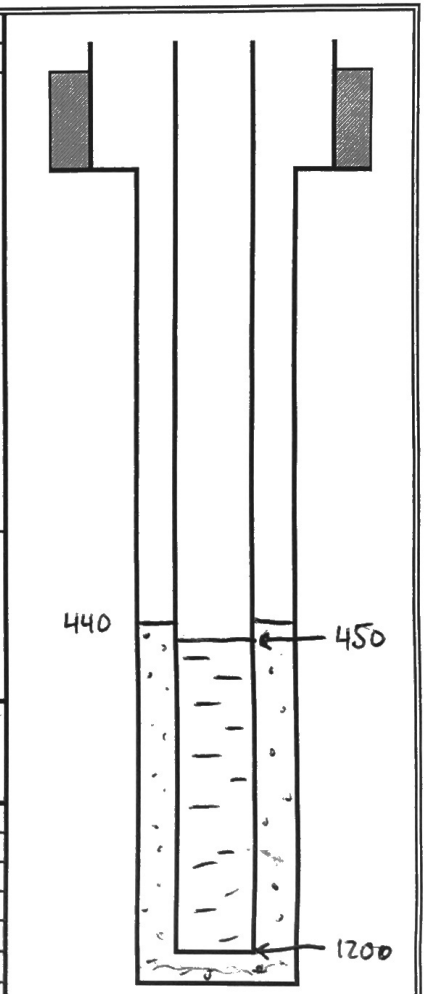
Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.65 Ft^3/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.66 Ft^3/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = _____ Ft^3/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
[1] Volume of bag (Ft^3) = bag weight/100
[2] Calculated depth = Previous Calculated depth - (v/A)

Bentonite Sack = 0.69 ft^3
Silica Sand Super Sack = 3000 lbs.

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
1	✓	3000	30	30	~1185	—	No. 8×12 Silica Sand.
2	✓	3000	30	60	~1135	1119	
3	✓	3000	30	90	~1080	—	
4	✓	3000	30	120	~1060	1063	
5	✓	3000	30	150	~1035	—	
6	✓	3000	30	180	~1005	1003	
7	✓	3000	30	210	~965		



- 0.67 Ft^3 in 1-5-gal bucket 30 ft^3 per bag = 46.15 lin. ft.

HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FCI **Project No.:** 129657-003 **Geologist:** S Hensel C Price
Well No.: U-03 **Date:**

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1](v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
8	✓	3000	30	240	~940	928	
9	✓	3000	30	270	883	-	
10	✓	3000	30	300	838	842	
11	✓	3000	30	330	796	-	
12	✓	3000	30	360	750	747	
13	✓	3000	30	390	701	-	
14	✓	3000	30	420	655	657	
15	✓	3000	30	450	611	-	
16	✓	3000	30	480	565	567	
17	✓	3000	30	510	521	-	
18	✓	3000	30	540	475	484	
19	✓	3000	30	570	438	446	
						486	Swabbing - 15 min/100', starting 1200'
20	✓	3000	30	600	440.5	444	
21	✓	268	2.68	602.68	439.9	440	4-5 gal buckets no 8x12 silica sand
22	✓		6.5	609.2	430.2	430	Tot 9-50 lb silver Sand #60, 3-5gal pellplug
23	✓		229.5	838.7	82.3	NA	8.5 yards Type V, 14.9 lbs/gal cement
24	✓		121.5	960.2	-102.1		45 yards Type V, 15.0 lbs/gal cement

Notes:

0.67 ft3 in 1x5 gal bucket

HALEY ALDRICH

CEMEX

54015411

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
[illegible]	9:00	9:27					

Customer Code: [illegible] Customer Name: FLORENCE COPPER INC

Customer Job Number: FLORENCE WELL 6002 Order Code / Date: 05/07/17

Project Code: 41027303 Project Name: FLORENCE WELL

Project P.O. Number: NO Order P.O. Number: NO

Ticket Date: [illegible] Delivery Address: 1575 N HUNT HIGHWAY

Map Page: Map/Row/Column: TYPE II/V CEMENT PIN PINNY201

Delivery Instructions:
HUNT HWY & FELIX RD
BATCH RECORDS REQUIRED ON ALL LOADS TYPE II/V CEMENT

Dispatcher: Yvonne

Ticket Number: 44127072

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
[illegible]	[illegible]	[illegible]	41245	LAWSON, JOHN	SLB BLDG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
[illegible]	8.50	16.50	1333049	TYPE II/V SLURRY 21 SK CMT/W YD3			
				LEGACY MATERIAL ID:			
1.00	1.00	1.00	349967	SUNDAY/HOLIDAY OPENING	EA		

MAY 7 AM 9:00

1.00	1247818	FUEL SURCHARGE ADJ
[illegible]	1202749	ENVIRONMENTAL FEE
1.00	1572398	FREIGHT_NON_TAXABLE_ARIZONA_

Cash / Check / Charge	Check # / Auth Code:	Signature of Driver Receiving Cash:	Cash Received:	Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: 8.5
WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. **WARNING**: Product may cause skin and/or eye irritation. **CAUTION**: Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.
AUTHORIZED SIGNATURE:
Ⓧ

68UNIVERSAL PLANT TRK: **CUSTOMER** LOAD NUM:

Truck	Driver	User	Disp Ticket Num	Time	Date
2011	411245	operator	44127072	8:57	5/7/17

Load Size	Mix Code	Returned	Qty	Mix Age	Seq	Load ID
8.50 CYDS	1333049				D	20642

Material	Required	Batched	% Moisture	Actual	Wat	Trim
CEMENT	16830.00 lb	16865.00 lb				
WATER	1034.5 gal	1034.6 gal		1034.6 gal		-5.00 gal

Actual Load 25499 lb
Slump: 3.00 in

Num Batches: 3

Design W/C: 0.534 Water/Cement: 0.512 A

Actual 1034.6 gal To Add: 42.3 ga

Manual 8:57:54

Load Completed Load Time: 9 :45 ---Tares----------

CEM SCALE	B:	1	ST:	-10	lb	ET:	-5	lb	WAT SCALE	B: 1	ST: -16
WAT SCALE	B:	2	ST:	-4	lb	ET:	-4	lb	CEM SCALE	B: 3	ST: -5

CEMEX

54015412

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
[illegible]	9:40	9:55	10:55	11:0[illegible]			

Customer Code: [illegible] Customer Name: FLORENCE COPPER INC

Customer Job Number: FLORENCE WELL Order Code / Date: 6002 05/07/17

Project Code: 41037304 Project Name: FLORENCE WELL

Project P.O. Number: NO Order P.O. Number: NO

Ticket Date: [illegible] Delivery Address: [illegible] HUNT HIGHWAY

TYPE II/V CEMENT Map Page: Map/Row/Column: PIN PINMY20

Delivery Instructions:
HUNT HWY & FELIX RD
BATCH RECORDS REQUIRED ON ALL LOADS TYPE II/V CEMENT

Dispatcher: rhvronnie

Ticket Number: 44127073

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
[illegible]	[illegible]	[illegible]	41284	VONRONNE, ROBERT	SLU BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
[illegible]	8.50	10.50	133304	TYPE II/V SLURRY 21 SK CMT/W YD3			
				LEGACY MATERIAL NO:			
			1247818	FUEL SURCHARGE ADJ			
			1002740	ENVIRONMENTAL FEE			
			1372392	FREIGHT_NON_TAXABLE_ARIZONA_			

MAY 7 AM 9:37

☐ Cash ☐ Check ☐ Charge Check # / Auth Code: _____

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: 0 GAL YARDS IN DRUM: 0 WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. **WARNING**: Product may cause skin and/or eye irritation. **CAUTION**: Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.
AUTHORIZED SIGNATURE:
X

68UNIVERSAL PREV TRK: 1003201 LOWSON JOHN LOAD NUM: 2

CUSTOMER

Truck	Driver	User	Disp Ticket Num	Time	Date
3909	411247	operator	44127073	9:34	5/7/17

Load Size	Mix Code	Returned	Qty	Mix Age	Seq	Load ID
8.00 CYDS	1333049				D	20643

Material	Required	Batched	% Moisture	Actual	Wat	Trim
CEMENT	15840.00 lb	15795.00 lb				
WATER	973.6 gal	972.8 gal		972.8 gal		-5.00 gal

Actual Load 23913 lb
Slump: 3.00 in

Num Batches: 3
Design W/C: 0.534 Water/Cement: 0.514 A

Actual 972.8 gal To Add: 40.8 g

Manual 9:35:02

Load Completed Load Time: :

---Tares---

CEM SCALE	B:	1	ST:	0	lb	ET:	0	lb	WAT SCALE	B: 1	ST: -6
WAT SCALE	B:	2	ST:	-4	lb	ET:	-4	lb	CEM SCALE	B: 3	ST: -5

APPENDIX E

Geophysical Logs

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-03
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: E-LOGS

MORE: NAT. GAMMA

LOCATION

SEC TWP RGE

OTHER SERVICES
COMBO TOOL
SONIC
DEVIATION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	5-5-17	TYPE FLUID IN HOLE	MUD
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	E-LOGS-GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	1208 FT.	LEVEL	FULL
DEPTH-LOGGER	1204 FT.	MAX. REC. TEMP.	32.79 DEG. C
BTM LOGGED INTERVAL	1204 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER	TOOL STRING/SN	MSI E-LOG 40 GRP SN 5019
WITNESSED BY	CHAD/LAUREN - H&A	LOG TIME:ON SITE/OFF SITE	8:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	5-5-17	**Date**	5-5-17	**Date**	5-5-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40 GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5019	**Tool SN**	6003		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	1204 FT.	**To**	1204 FT.	**To**	1204 FT.		
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	5-4-17	**Operation Check**	5-4-17	**Operation Check**	5-4-17		
Calibration Check	5-4-17	**Calibration Check**	5-4-17	**Calibration Check**	N/A		
Time Logged	9:00 PM	**Time Logged**	10:25 PM	**Time Logged**	11:25 PM		

Date	5-5-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	MSI 2DVA	**Tool Model**		**Tool Model**			
Tool SN	3082	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	1204 FT	**To**		**To**			
Recorded By	E. TURNER	**Recorded By**		**Recorded By**			
Truck No	900	**Truck No**		**Truck No**			
Operation Check	5-4-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	12:30 AM	**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 24 IN.

E-Log Calibration Range: 1-10000 OHM-M **Calibration Points:** 1 & 10000 OHM-M

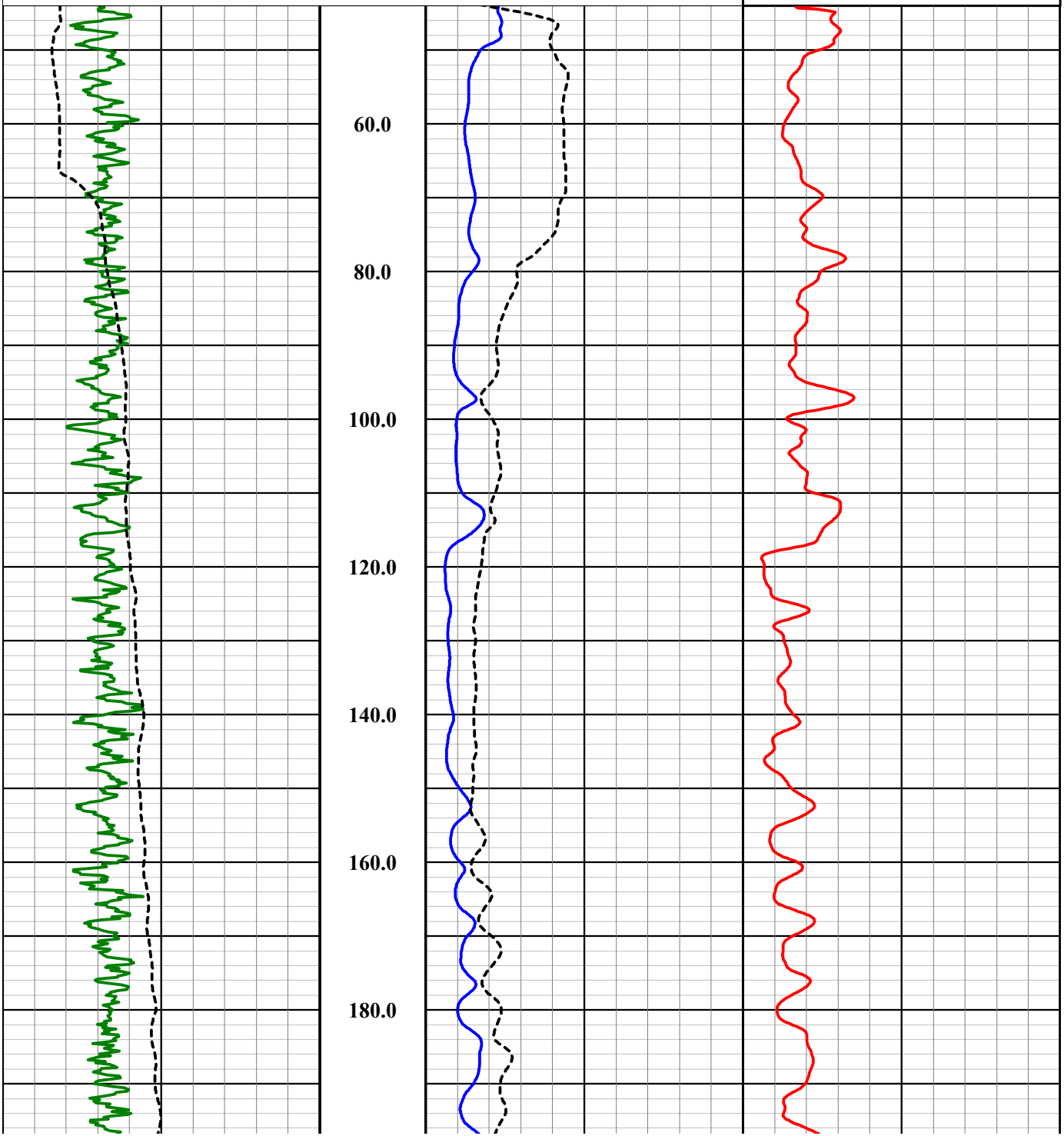
Disclaimer:

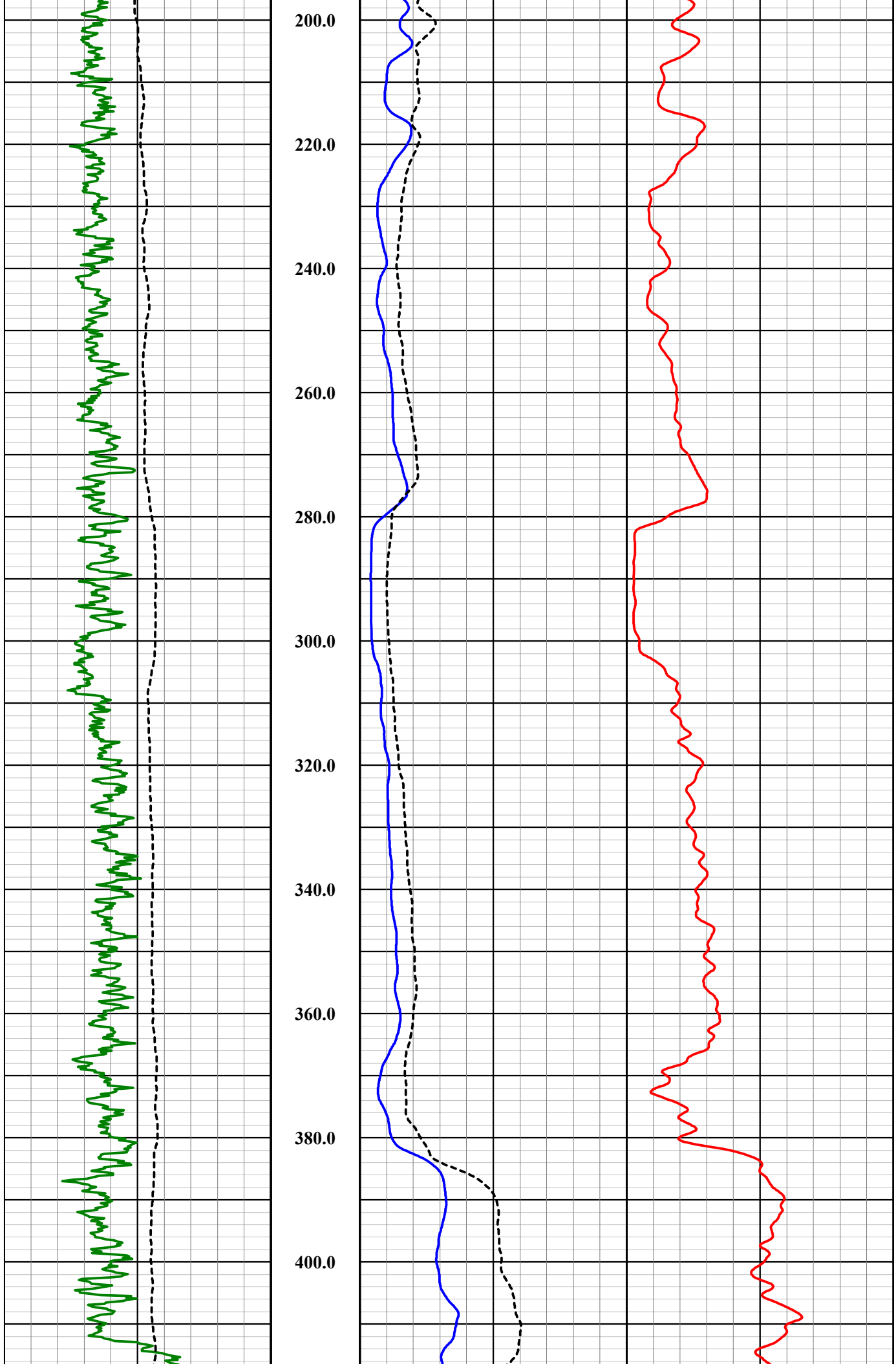
All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

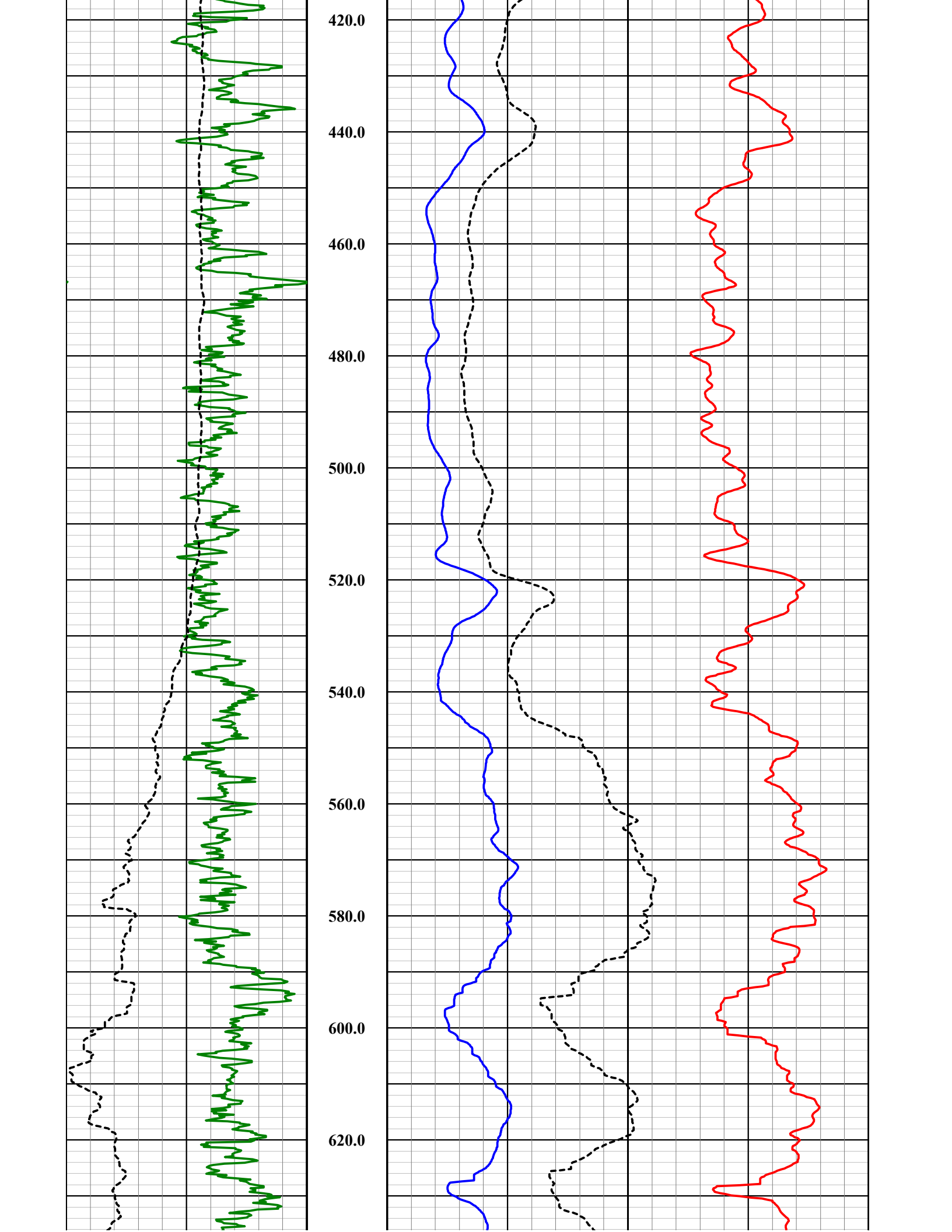
Nat. Gamma			Depth	16" NRes		
0	API	200	1in:20ft	0	Ohm-m	400
SP				64" NRes		
0	mV	1000		0	Ohm-m	400

SPR

20 Ohms 60




200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0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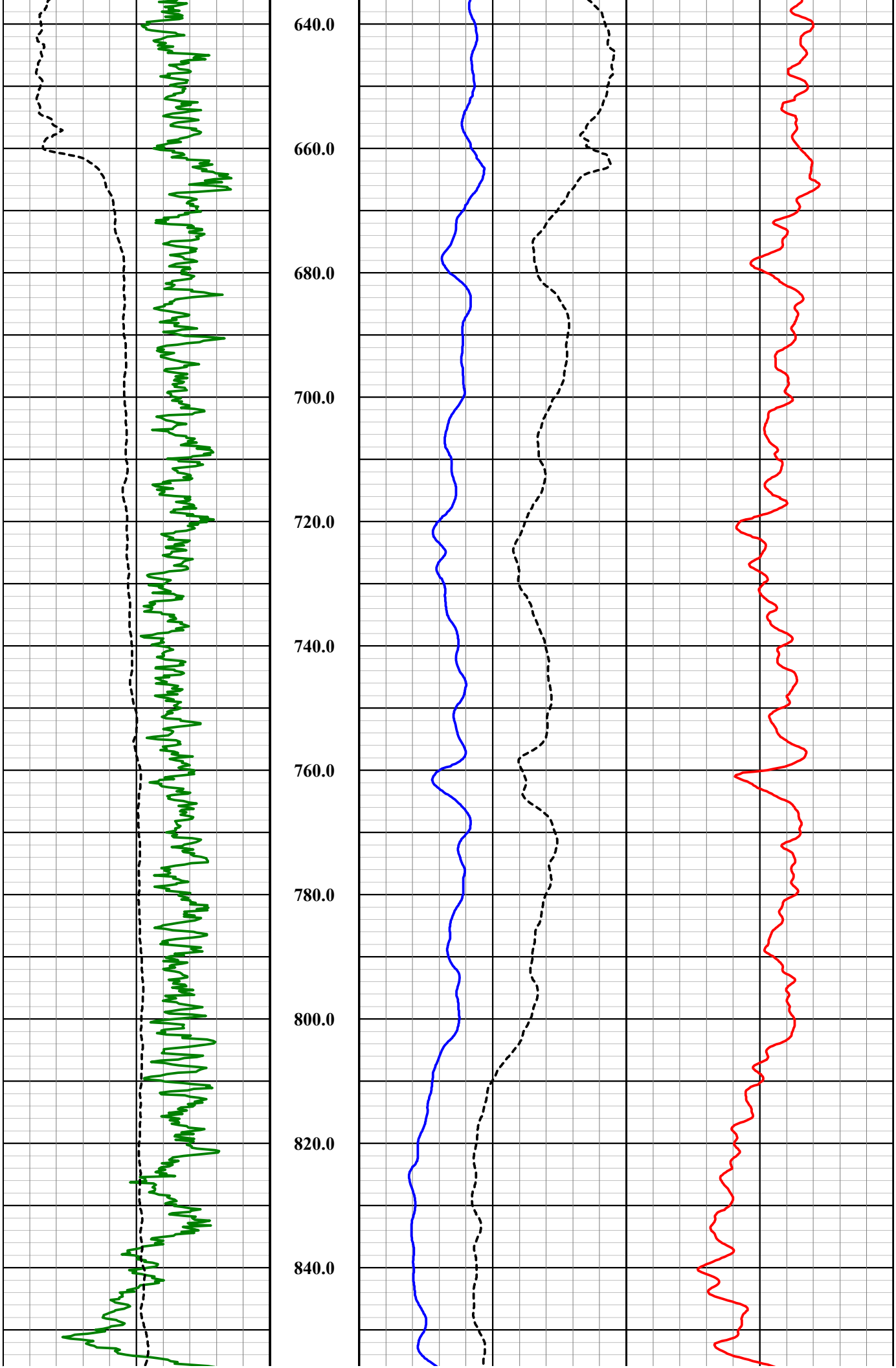
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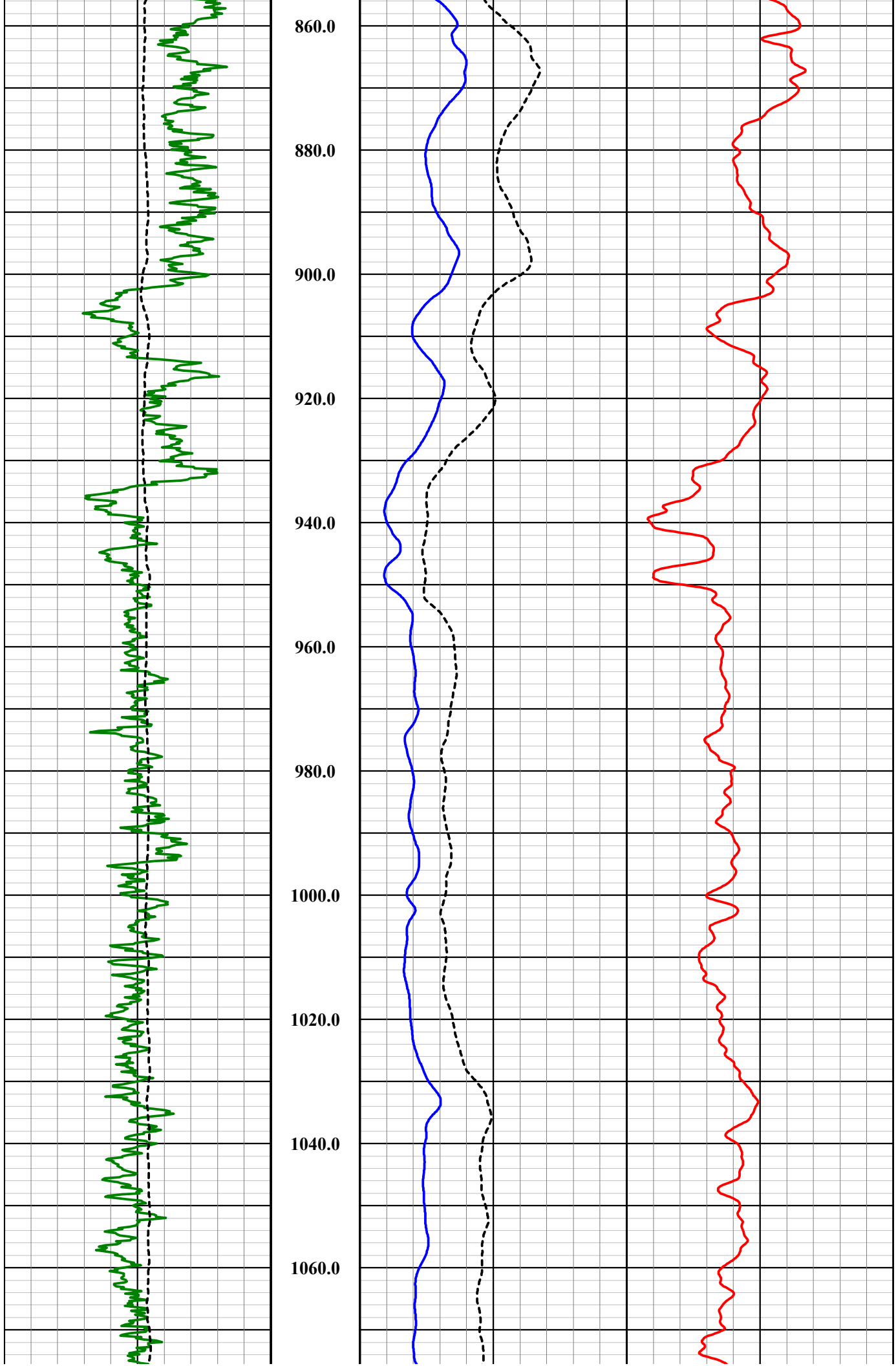
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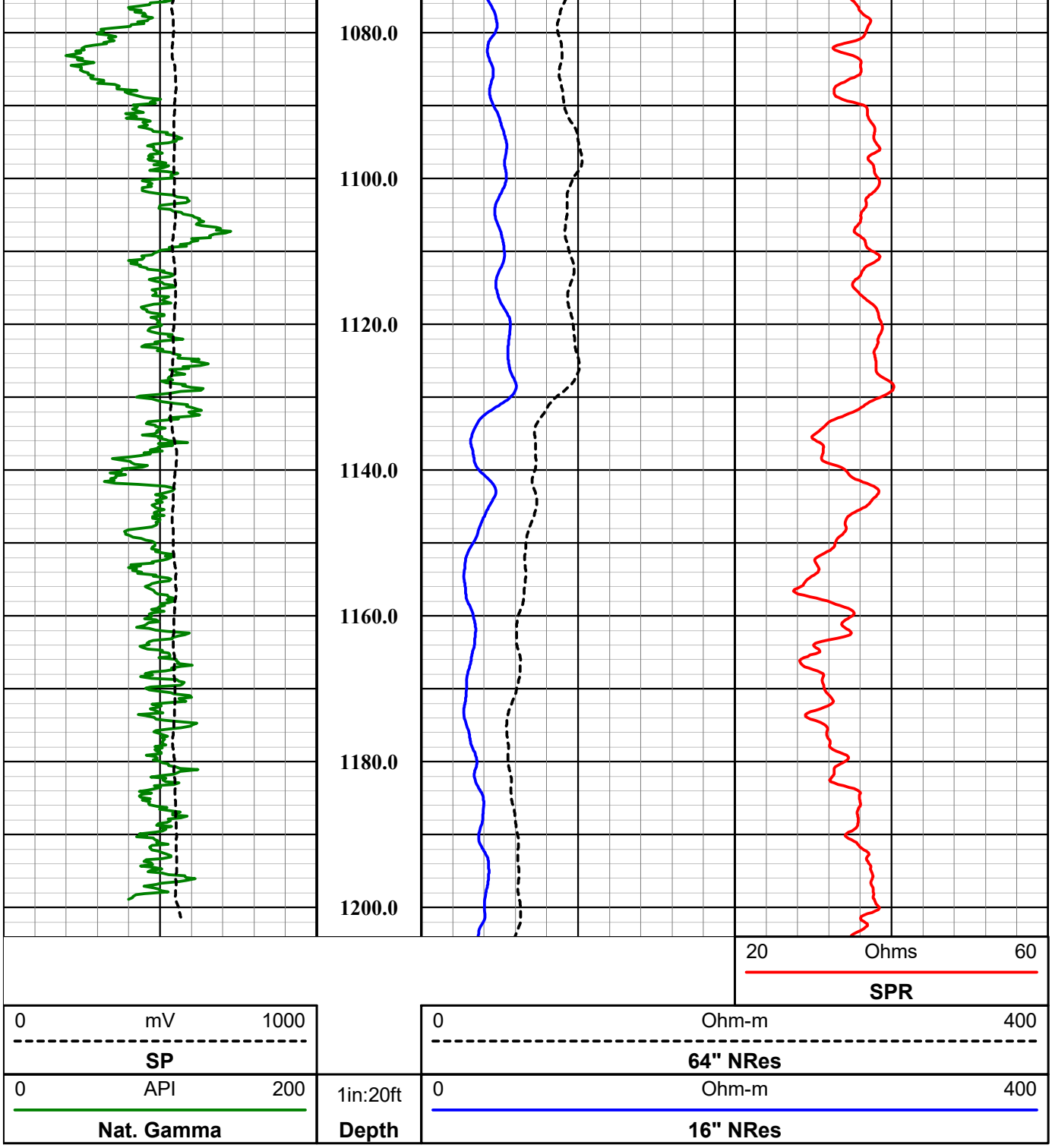

MSI 40GRP E-Log Tool

Probe Top = Depth Ref.

Tool SN: 5019, 5513, & 5514

Four Conductor MSI Probe Top

Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

Bridle Electrode (N Electrode)

Probe Length = 1.98 m or 6.5 ft

Bridle Length = 7.88 m or 25.86 ft

Probe Weight = 7.3 kg or 16.0 lbs

Can only be collected in fluid

Isolation Bridle

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

Electrode Measuring Points (from bottom of probe)
- **Spontaneous Potential (SP): 1.777 m or 5.81 ft**
- **16" Normal Resistivity (16" NRes): 0.3548 m or 1.16 ft**
- **64" Normal Resistivity (64" NRes): 0.9644 m or 3.16 ft**
- **Single Point Resistance (SPR): 0.152 m or 0.50 ft**
- **Natural Gamma Ray (Nat. Gamma): 0.73 m or 2.39 ft**

Natural Gamma Ray

16" Normal Resistivity Electrode (M Electrode)

Current Electrode/Single Point Resistance Electrode (A Electrode)

1.63" or 40 mm Diameter (41.4 mm with neoprene heat shrink and electrical tape)

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-03
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final E-log Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-03
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: GAMMA-CALIPER
MORE: TEMP-FLUID RES.

LOCATION

SEC TWP RGE

OTHER SERVICES
ELOGS
SONIC
DEVIATION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	5-5-17	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA-CALIPER-TFR	VISCOSITY	N/A
DEPTH-DRILLER	1208 FT.	LEVEL	FULL
DEPTH-LOGGER	1204 FT.	MAX. REC. TEMP.	32.79 DEG. C
BTM LOGGED INTERVAL	1204 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER	TOOL STRING/SN	MSI COMBO TOOL SN 4183
WITNESSED BY	CHAD/LAUREN - H&A	LOG TIME:ON SITE/OFF SITE	8:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	5-5-17	**Date**	5-5-17	**Date**	5-5-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40 GRP	**Tool Model**	MSI 60MM SONIC
Tool SN	4183	**Tool SN**	5019	**Tool SN**	6003
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	1204 FT.	**To**	1204 FT.	**To**	1204 FT.
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	5-4-17	**Operation Check**	5-4-17	**Operation Check**	5-4-17
Calibration Check	5-4-17	**Calibration Check**	5-4-17	**Calibration Check**	N/A
Time Logged	9:00 PM	**Time Logged**	10:25 PM	**Time Logged**	11:25 PM

Date	5-5-17	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	MSI 2DVA	**Tool Model**		**Tool Model**	
Tool SN	3082	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	1204 FT	**To**		**To**	
Recorded By	E. TURNER	**Recorded By**		**Recorded By**	
Truck No	900	**Truck No**		**Truck No**	
Operation Check	5-4-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	12:30 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 24 IN.

E-Log Calibration Range: 1-10000 OHM-M **Calibration Points:** 1 & 10000 OHM-M

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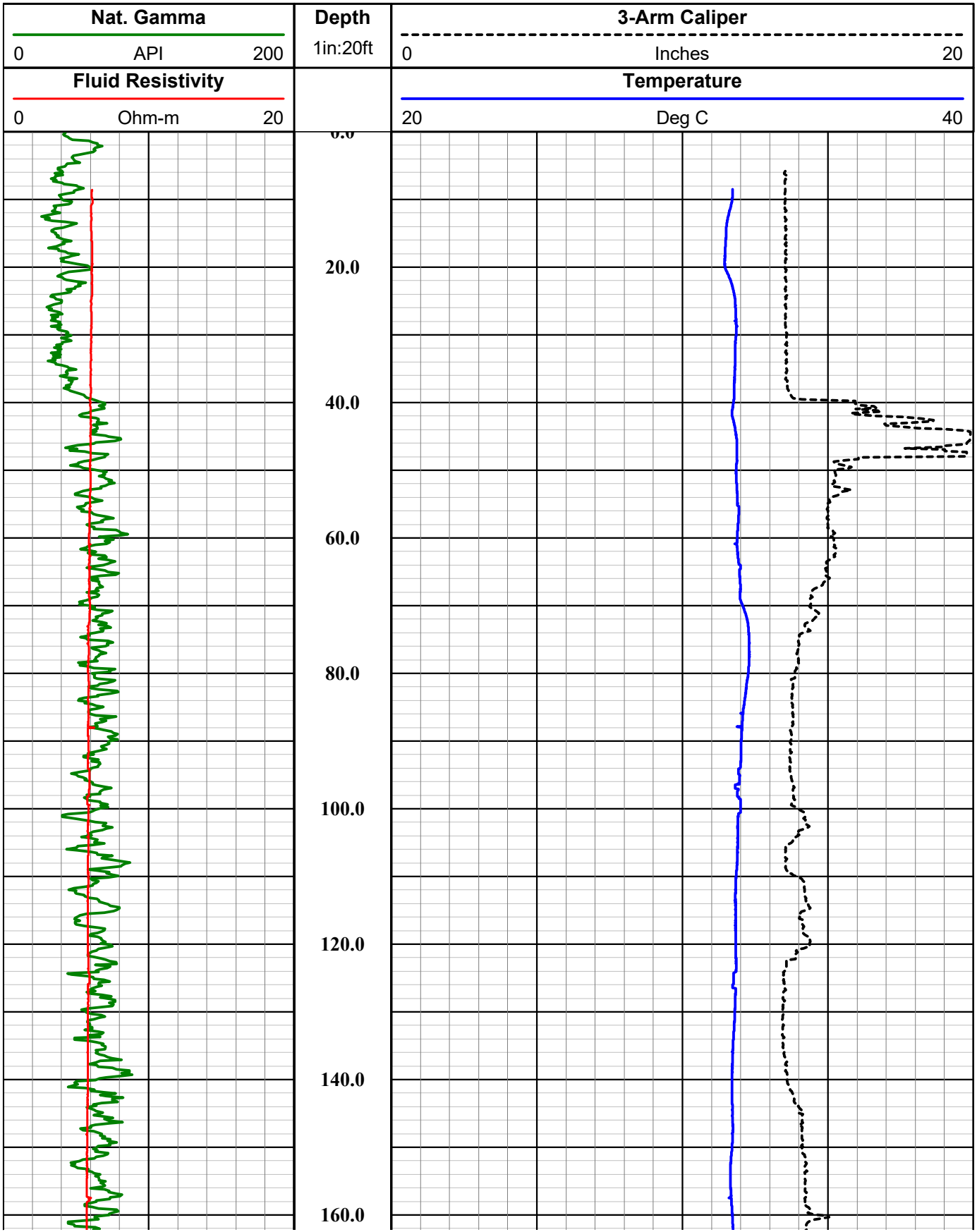

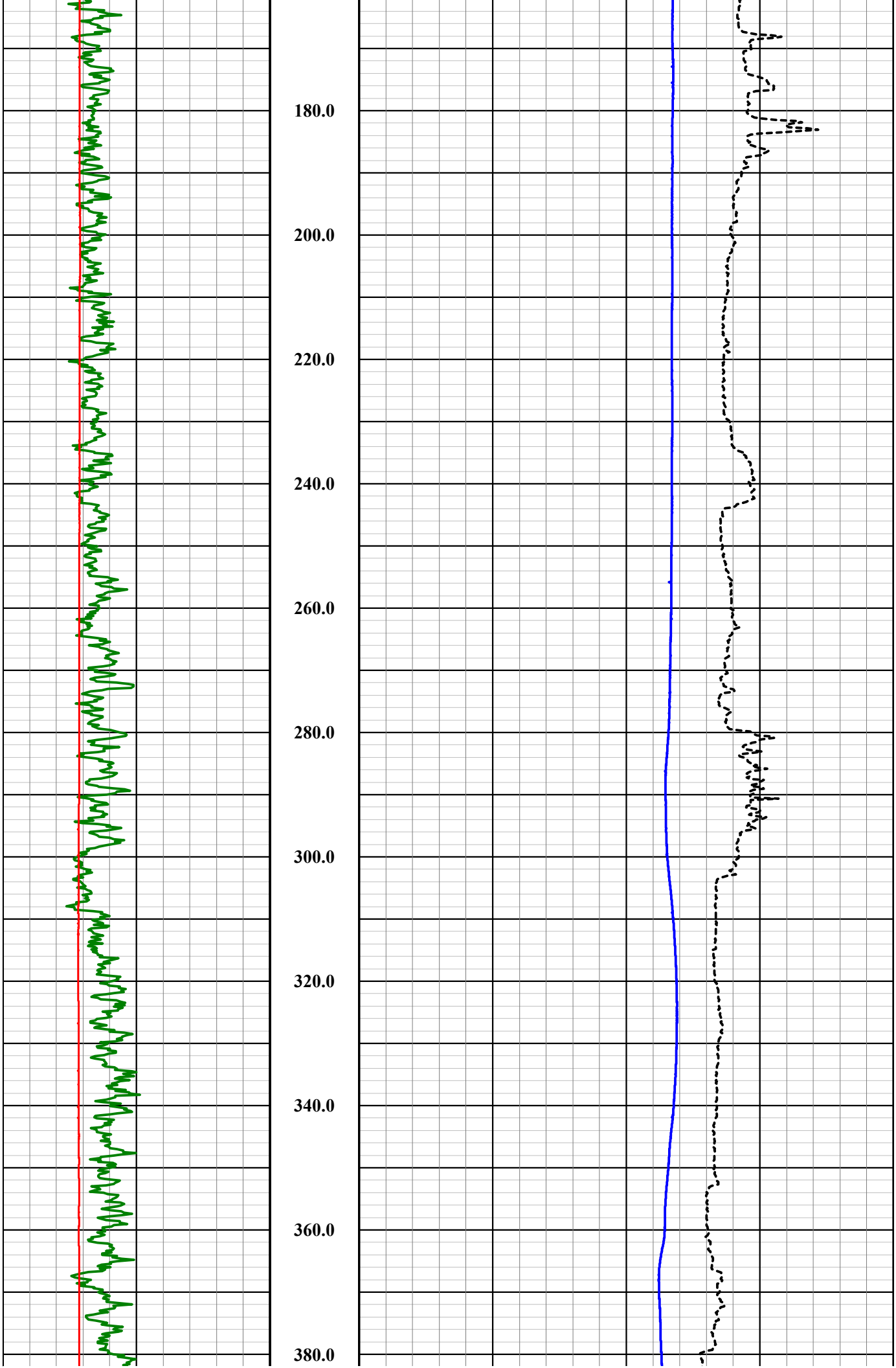
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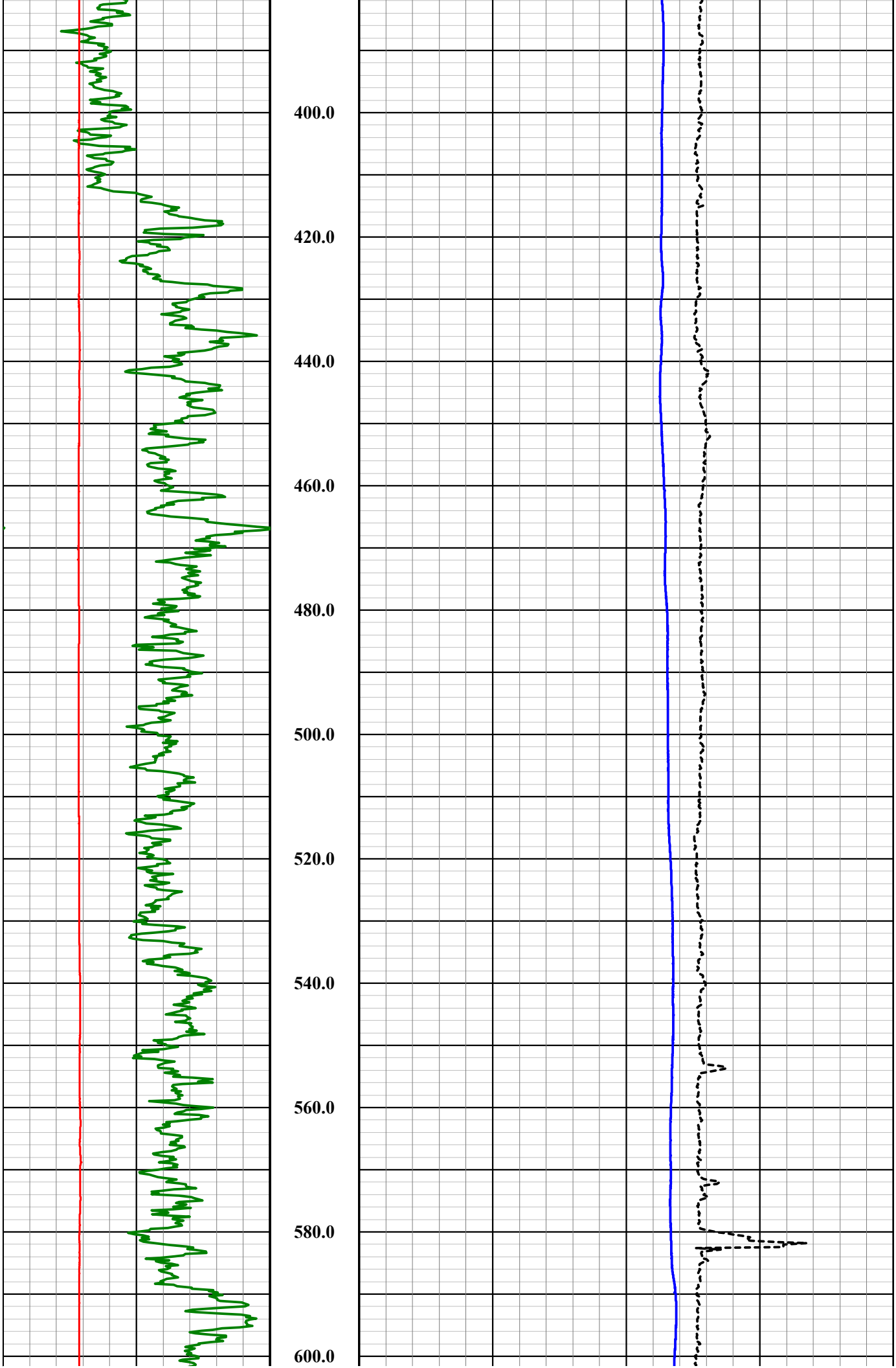
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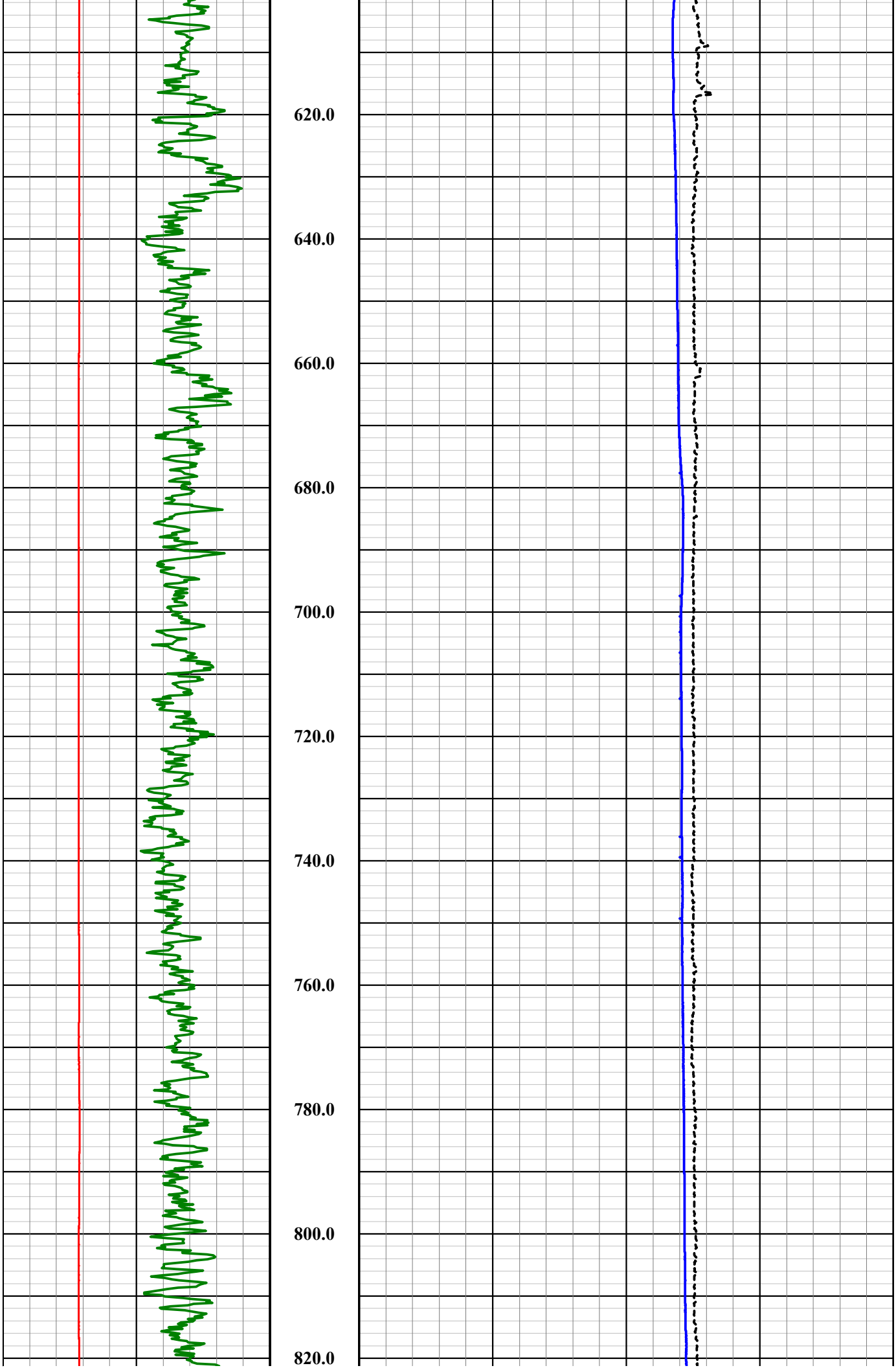
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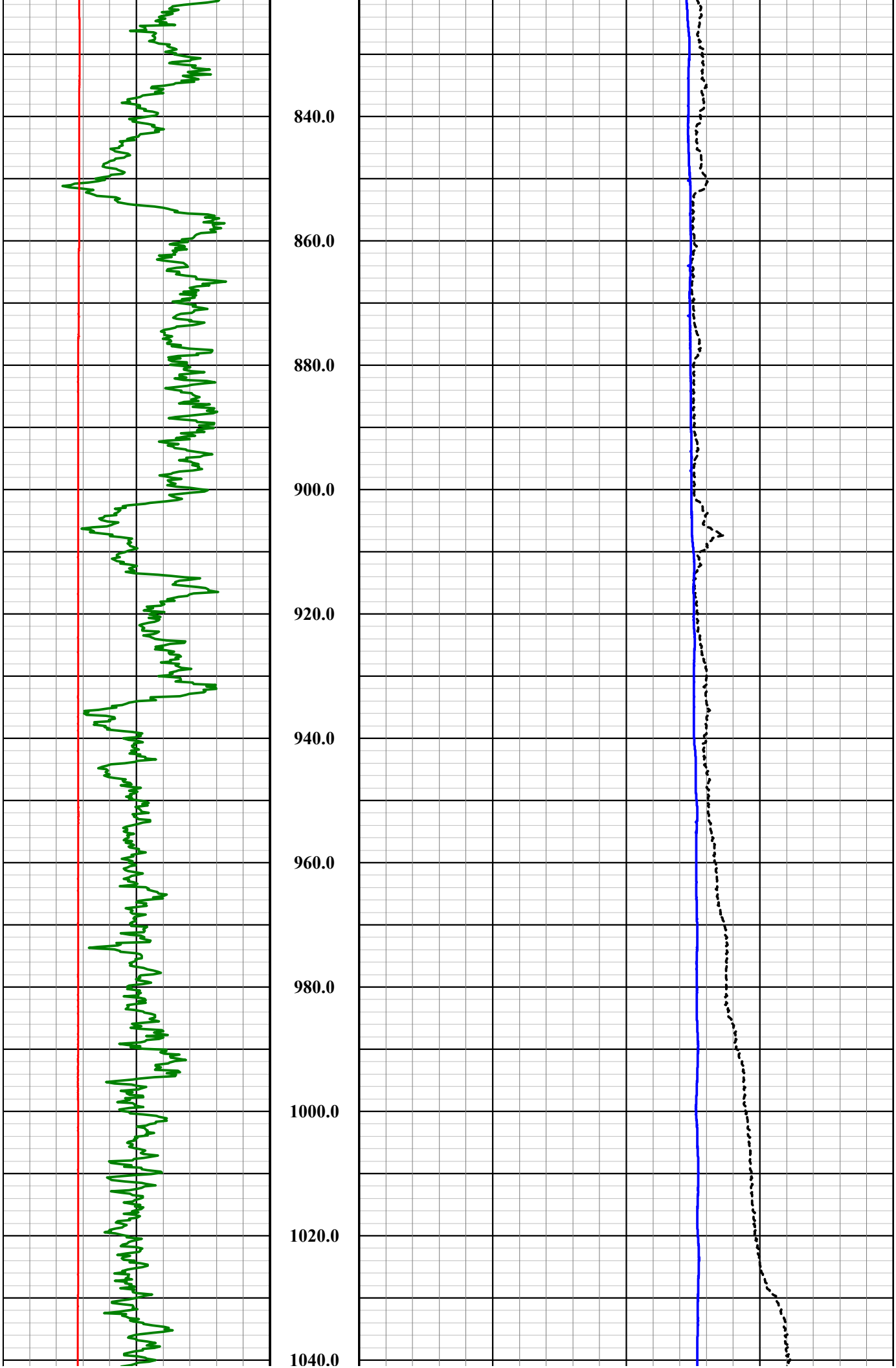
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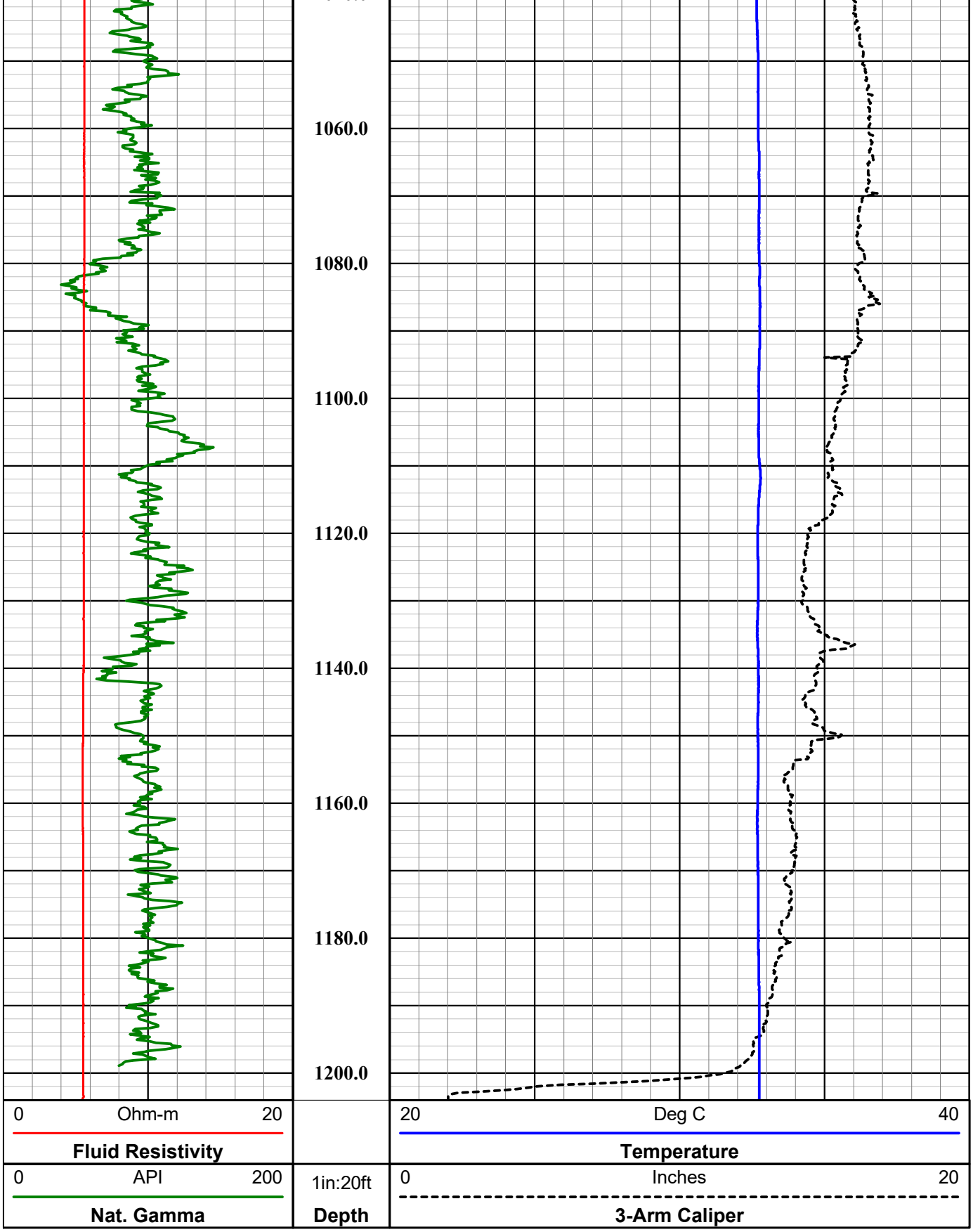
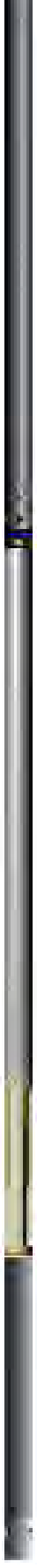


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft



Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-03
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final	**GCT Summary**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-03
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 60MM SONIC

MORE: NAT. GAMMA-CALIPER

LOCATION

SEC TWP RGE

OTHER SERVICES
ELOGS
DEVIATION
TEMPERATURE
FLUID RES.

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	5-5-17	TYPE FLUID IN HOLE	MUD
RUN No	1/3	MUD WEIGHT	N/A
TYPE LOG	SONIC-CAL-GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	1208 FT.	LEVEL	FULL
DEPTH-LOGGER	1204 FT.	MAX. REC. TEMP.	32.79 DEG. C
BTM LOGGED INTERVAL	1204 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER	TOOL STRING/SN	MSI 60MM SONIC SN 6003
WITNESSED BY	CHAD/LAUREN - H&A	LOG TIME:ON SITE/OFF SITE	8:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	5-5-17	**Date**	5-5-17	**Date**	5-5-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40 GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5019	**Tool SN**	6003		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	1204 FT.	**To**	1204 FT.	**To**	1204 FT.		
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	5-4-17	**Operation Check**	5-4-17	**Operation Check**	5-4-17		
Calibration Check	5-4-17	**Calibration Check**	5-4-17	**Calibration Check**	N/A		
Time Logged	9:00 PM	**Time Logged**	10:25 PM	**Time Logged**	11:25 PM		
Date	5-5-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	MSI 2DVA	**Tool Model**		**Tool Model**			
Tool SN	3082	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	1204 FT	**To**		**To**			
Recorded By	E. TURNER	**Recorded By**		**Recorded By**			
Truck No	900	**Truck No**		**Truck No**			
Operation Check	5-4-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	12:30 AM	**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 24 IN.

E-Log Calibration Range: 1-10000 OHM-M **Calibration Points:** 1 & 10000 OHM-M

Disclaimer:

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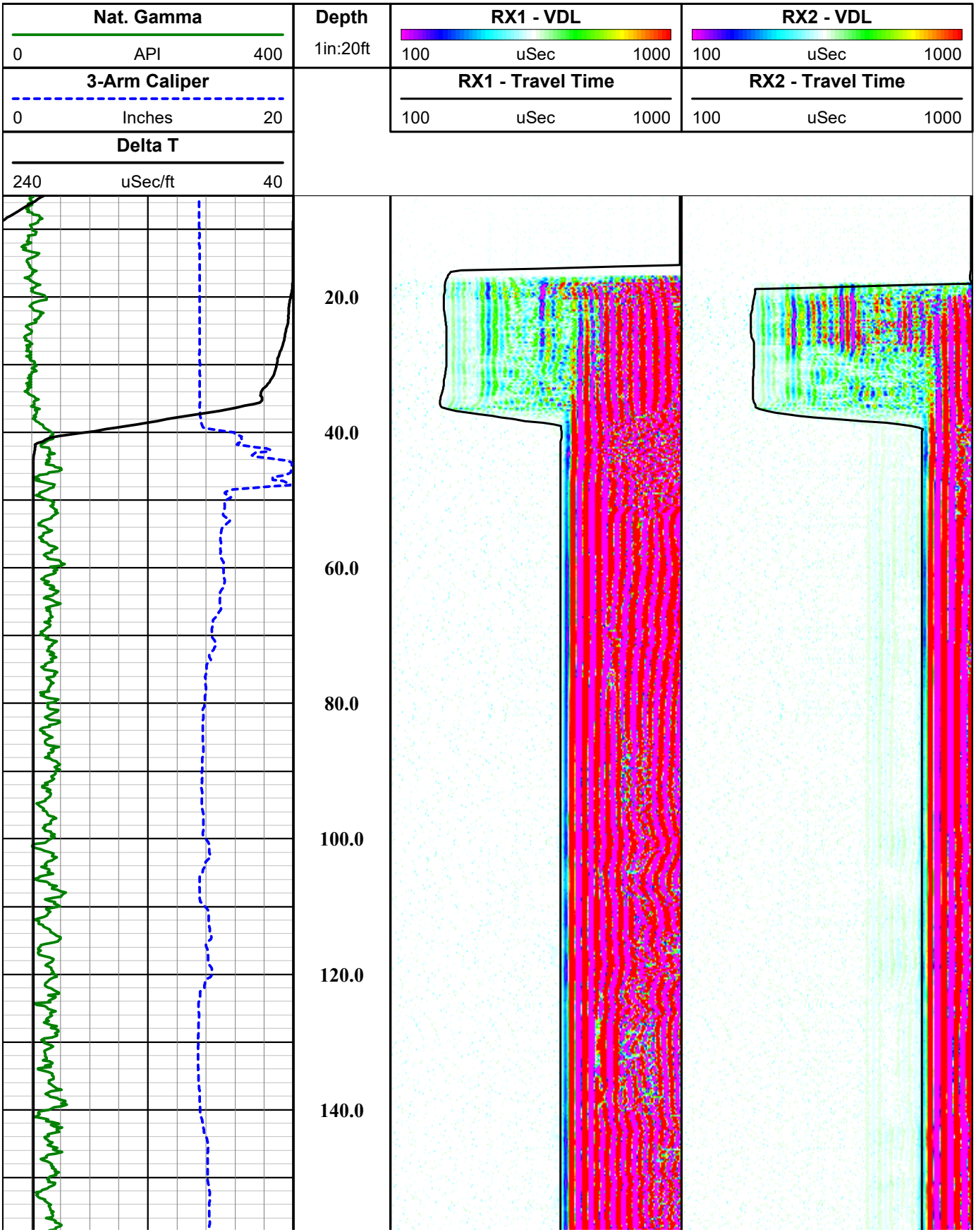

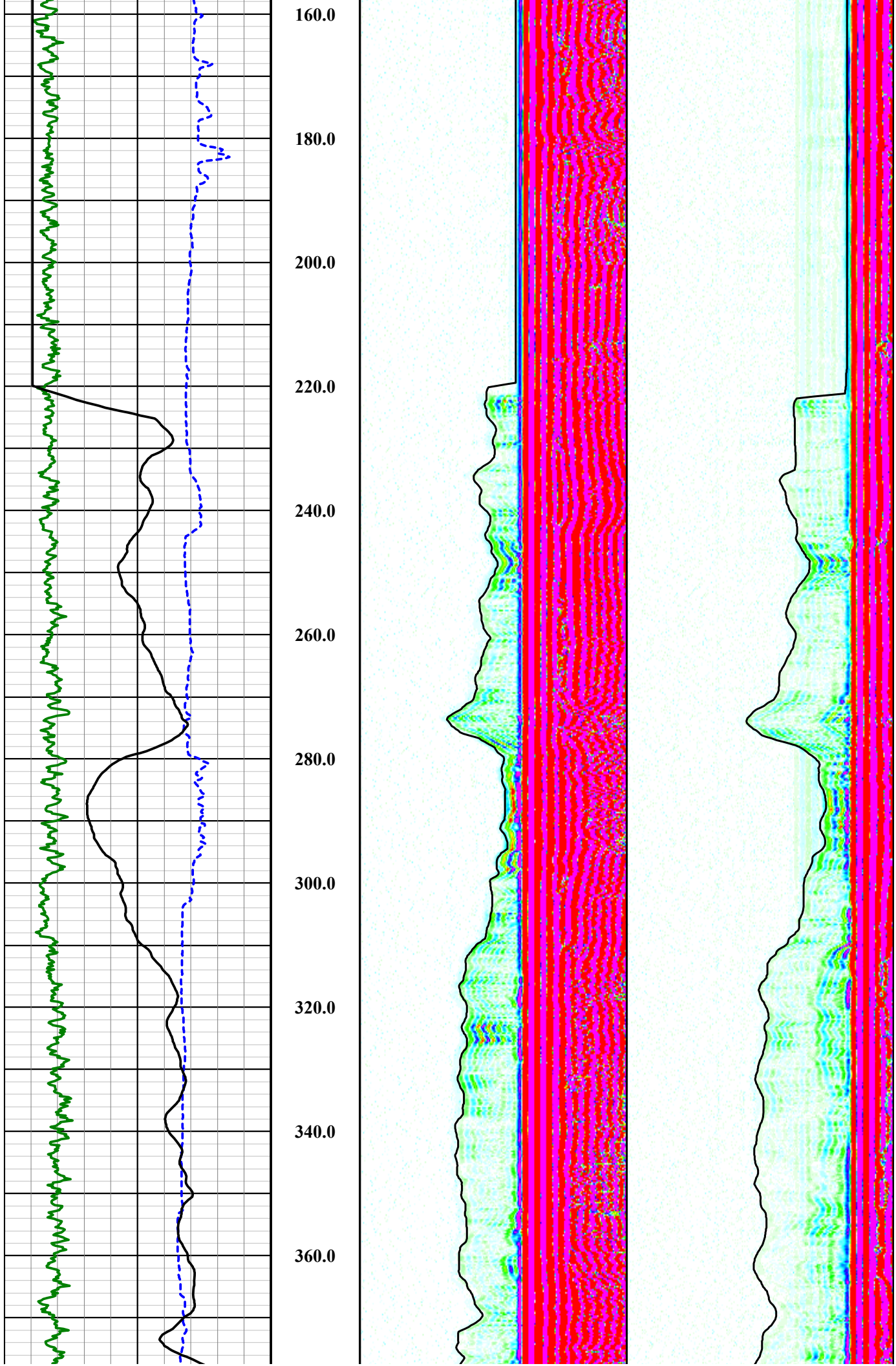
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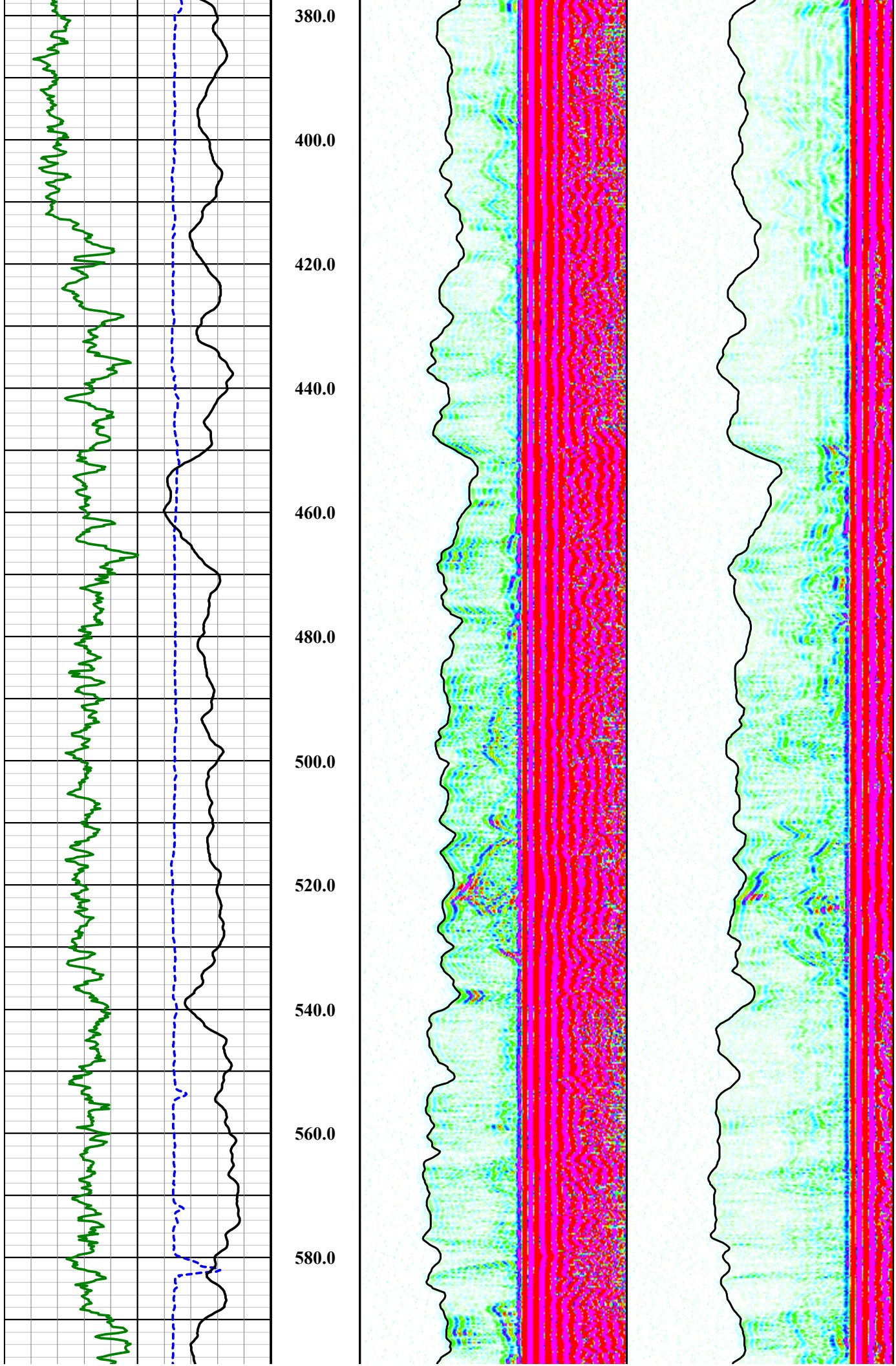
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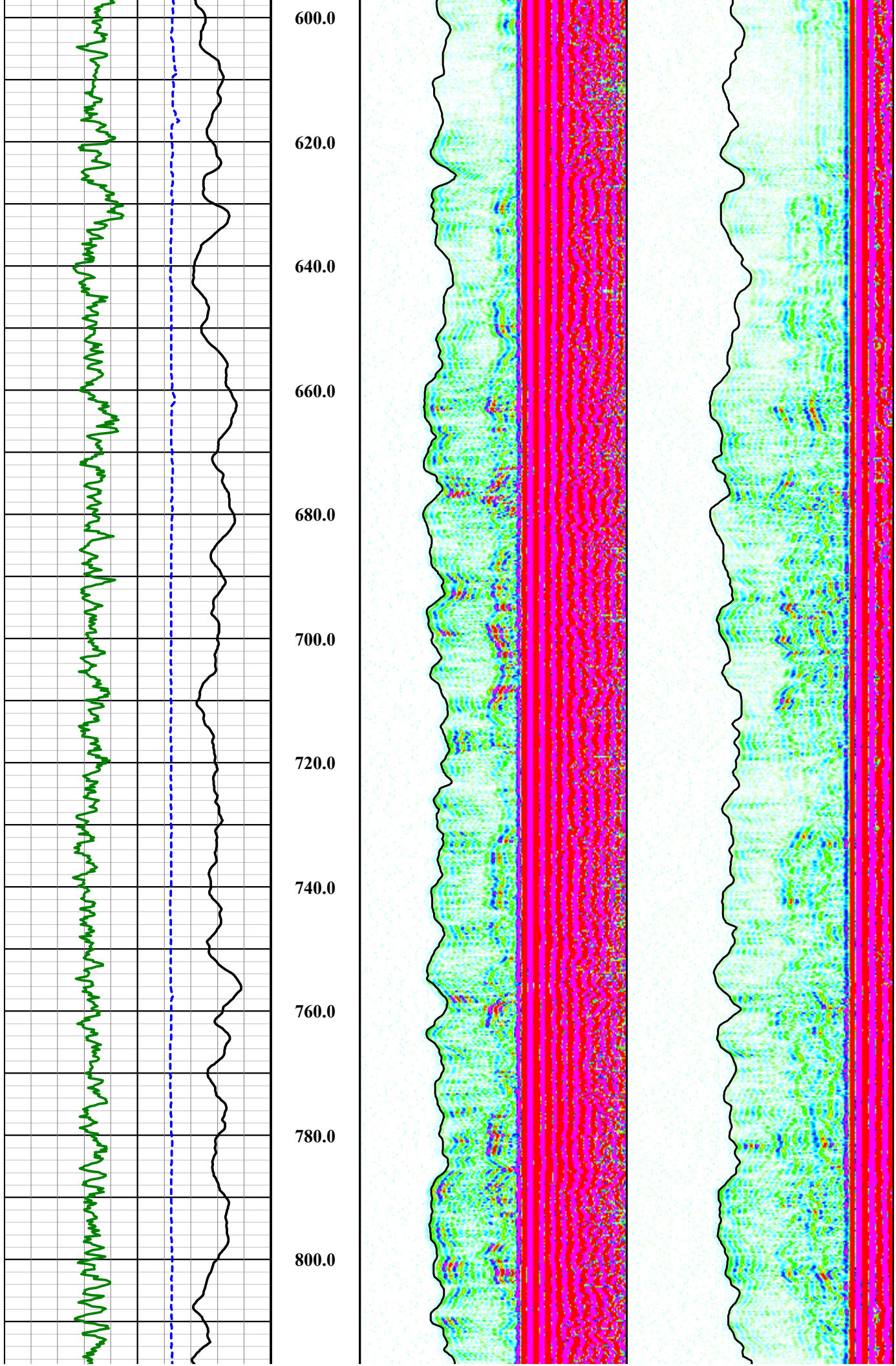
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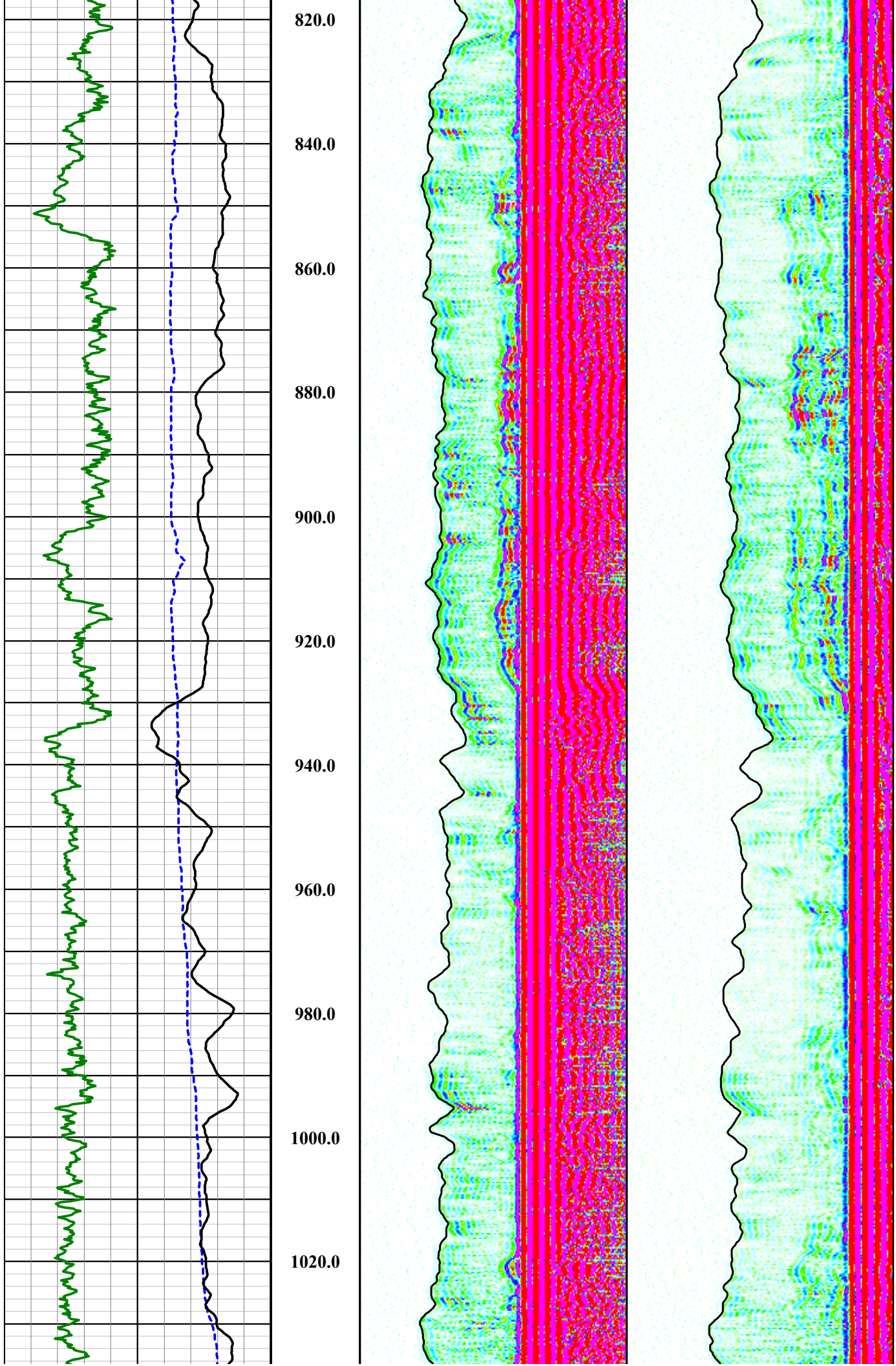
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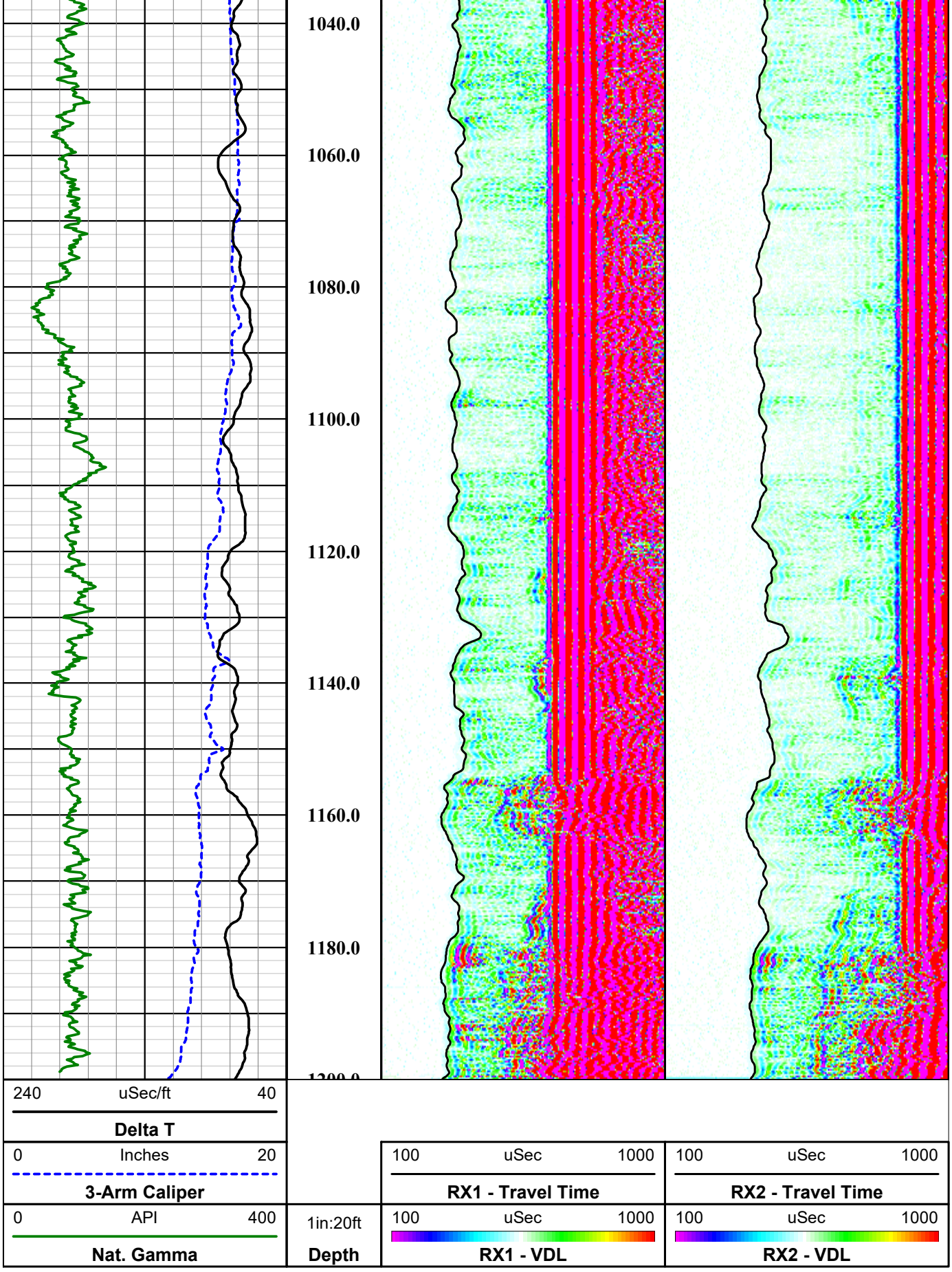


MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 5001, 5050 & 6003

Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft
Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Rx-2 Tx - Rx2 Spacing = 1.22 m (48.0 in)

Rx-1 Tx - Rx1 Spacing = .91 m (36.0 in)

Acoustic Isolater

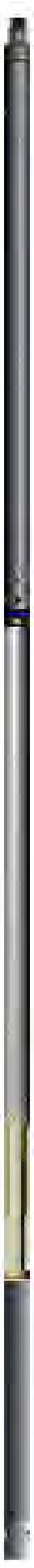
Tx = Acoustic Transmitter

0.660 m or 26.0 in. - End of tool to center of Tx

2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-03
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Sonic Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-03
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 3-ARM CALIPER
MORE: W/ VOLUME CALC

LOCATION

SEC TWP RGE

OTHER SERVICES
ELOGS
SONIC
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	5-5-17	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	CALIPER	VISCOSITY	N/A
DEPTH-DRILLER	1208 FT.	LEVEL	FULL
DEPTH-LOGGER	1204 FT.	MAX. REC. TEMP.	32.79 DEG. C
BTM LOGGED INTERVAL	1204 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER	TOOL STRING/SN	MSI COMBO TOOL SN 4183
WITNESSED BY	CHAD/LAUREN - H&A	LOG TIME:ON SITE/OFF SITE	8:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	5-5-17	**Date**	5-5-17	**Date**	5-5-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40 GRP	**Tool Model**	MSI 60MM SONIC
Tool SN	4183	**Tool SN**	5019	**Tool SN**	6003
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	1204 FT.	**To**	1204 FT.	**To**	1204 FT.
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	5-4-17	**Operation Check**	5-4-17	**Operation Check**	5-4-17
Calibration Check	5-4-17	**Calibration Check**	5-4-17	**Calibration Check**	N/A
Time Logged	9:00 PM	**Time Logged**	10:25 PM	**Time Logged**	11:25 PM

Date	5-5-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	MSI 2DVA	**Tool Model**		**Tool Model**	
Tool SN	3082	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	1204 FT	**To**		**To**	
Recorded By	E. TURNER	**Recorded By**		**Recorded By**	
Truck No	900	**Truck No**		**Truck No**	
Operation Check	5-4-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	12:30 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 24 IN.

E-Log Calibration Range: 1-10000 OHM-M **Calibration Points:** 1 & 10000 OHM-M

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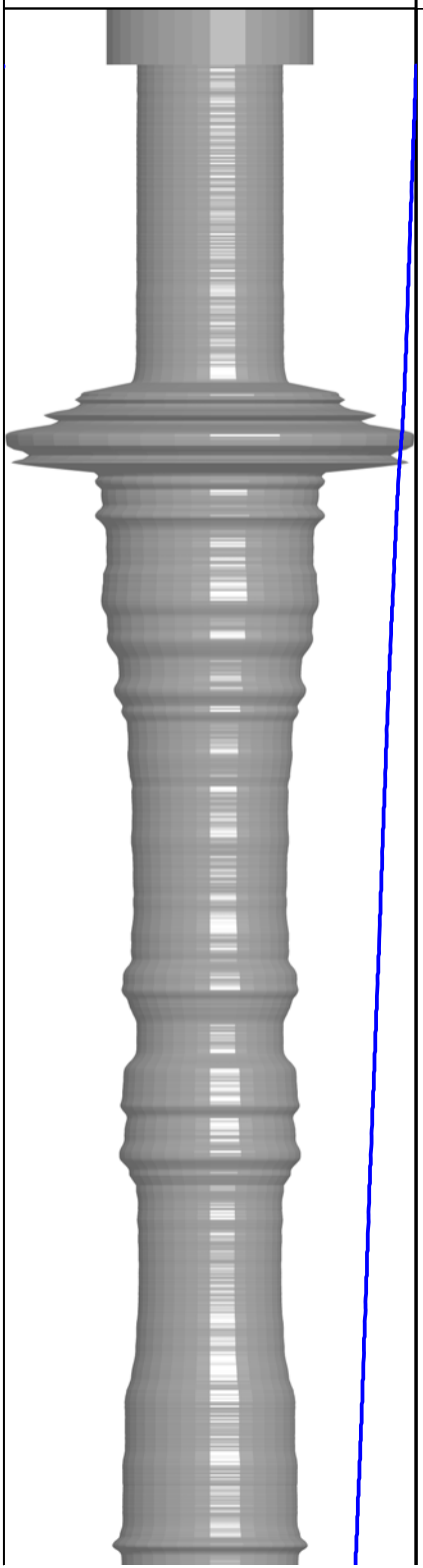
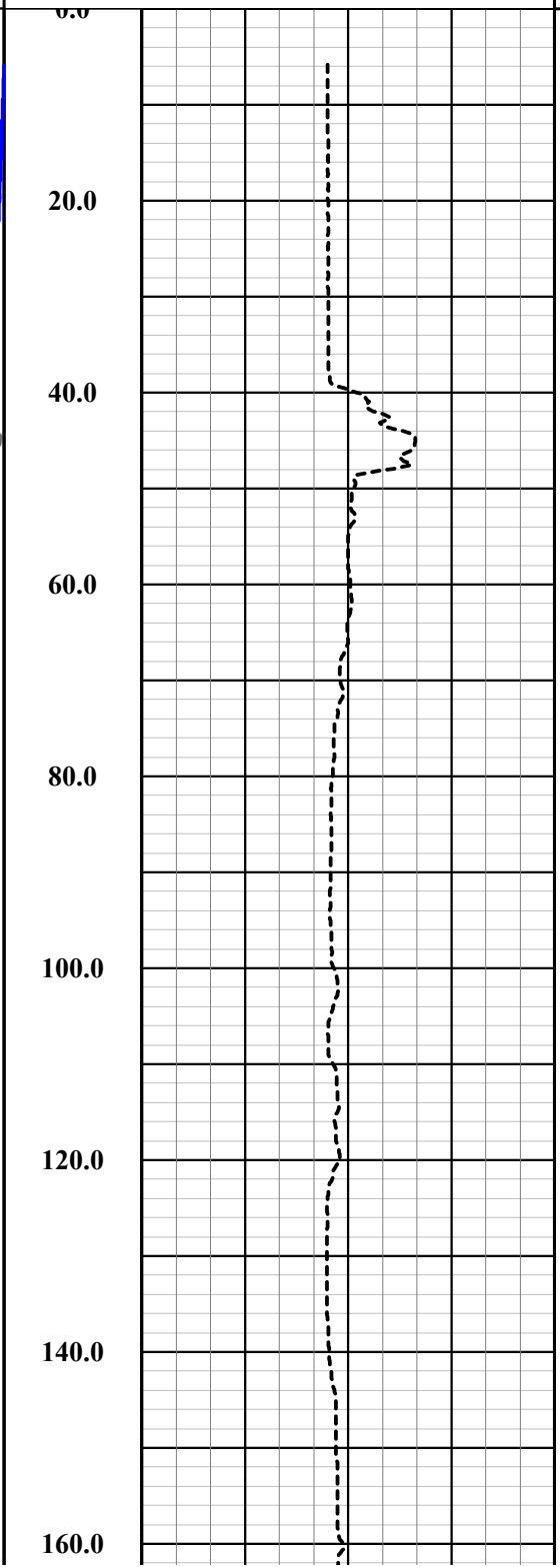
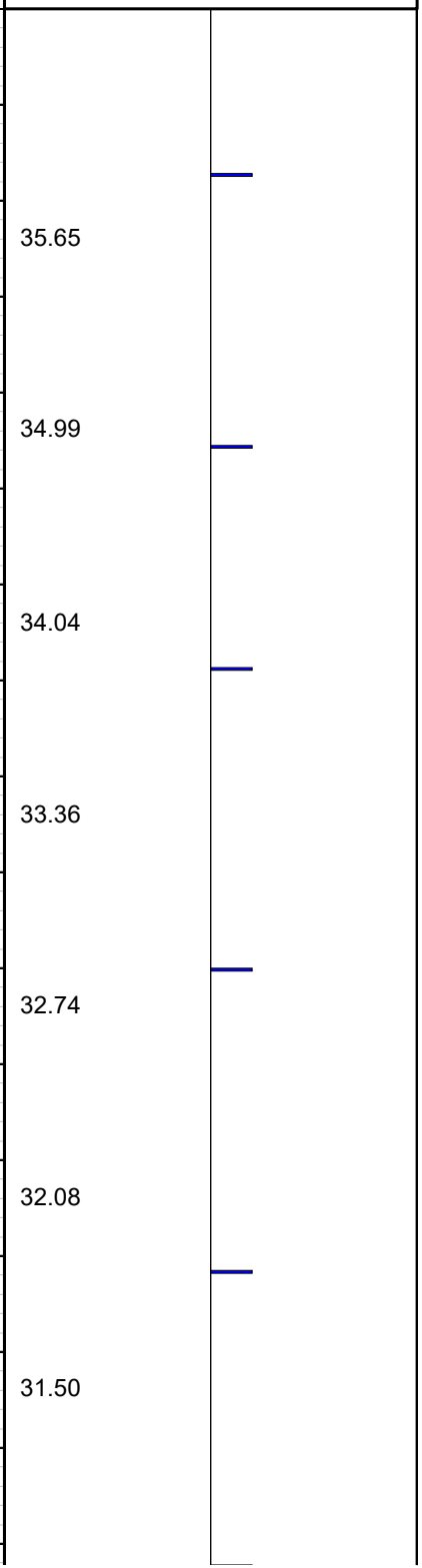
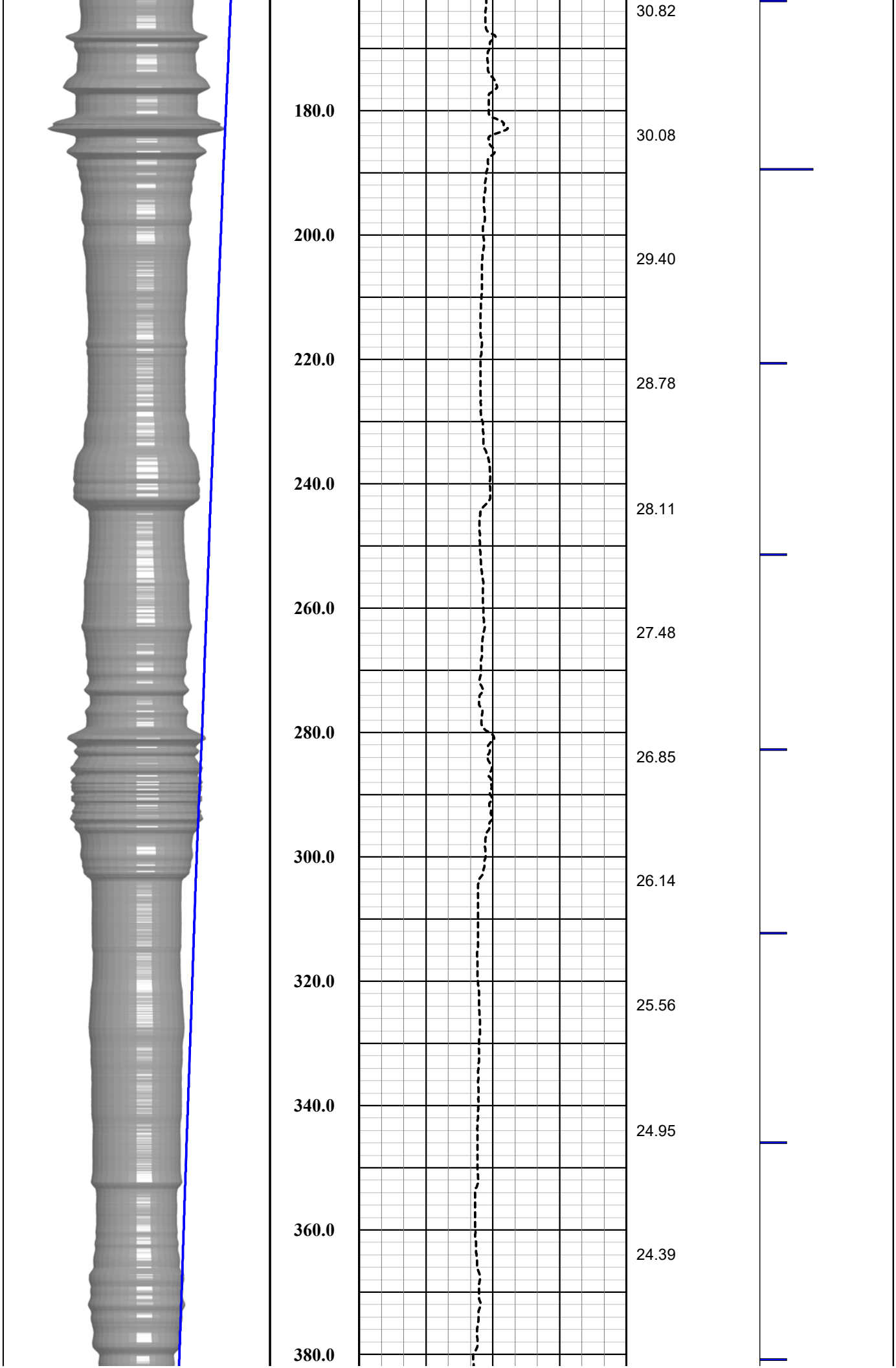
Total Volume	Depth	3-Arm Caliper	Cumulated Vol (cu.yd)
0 cu.yd 36.2	1in:20ft	0 Inches 30	
3D View			Based on 5.562" OD Casing
-0°			





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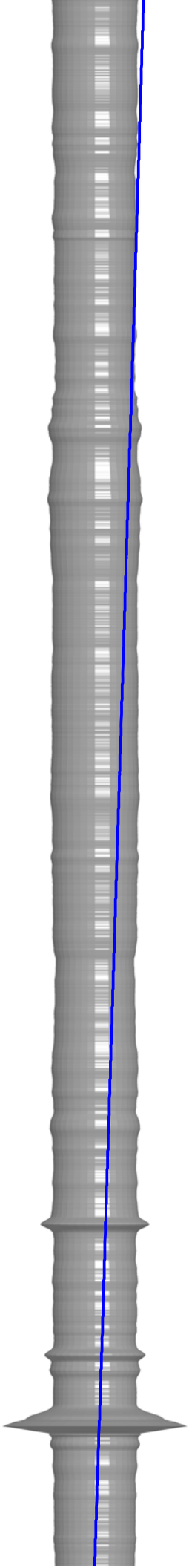
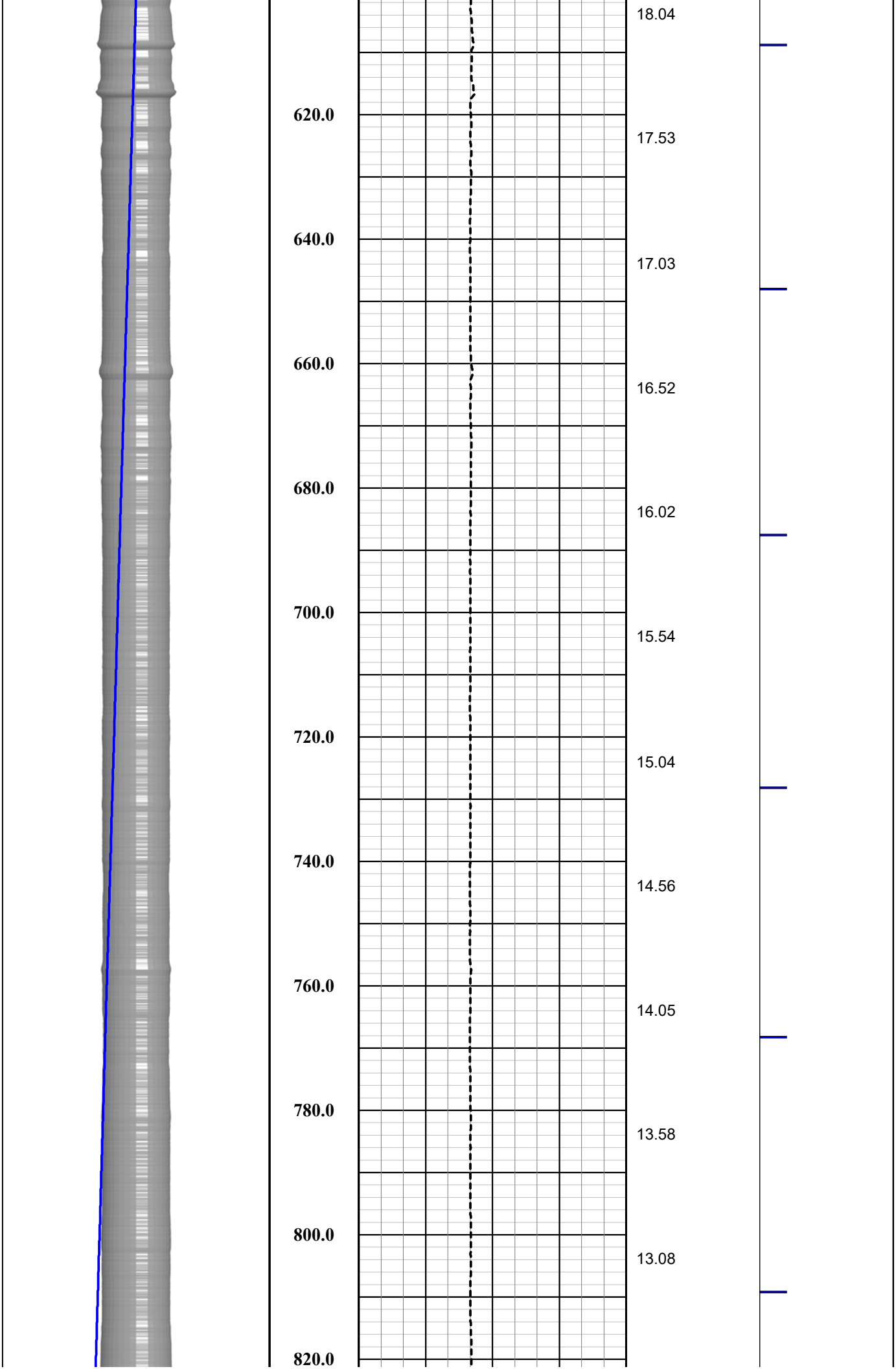
28.78
28.11
27.48
26.85
26.14
25.56
24.95
24.39



400.0	23.32
420.0	22.80
440.0	22.27
460.0	21.74
480.0	21.22
500.0	20.69
520.0	20.17
540.0	19.64
560.0	19.13
580.0	18.57
600.0	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660.0
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740.0
760.0
780.0
800.0
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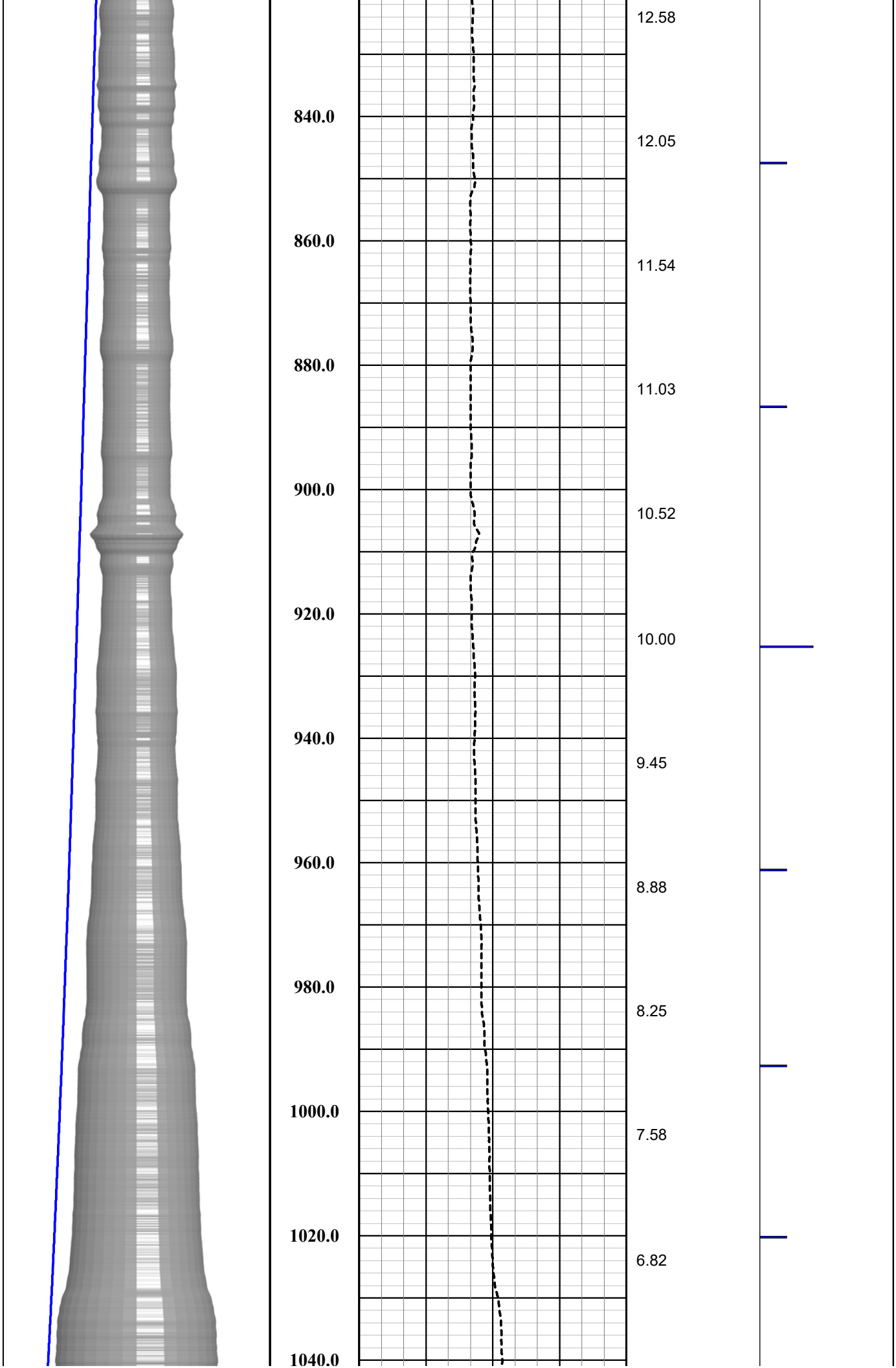
17.53
17.03
16.52
16.02
15.54
15.04
14.56
14.05
13.58
13.08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860.0
880.0
900.0
920.0
940.0
960.0
980.0
1000.0
1020.0
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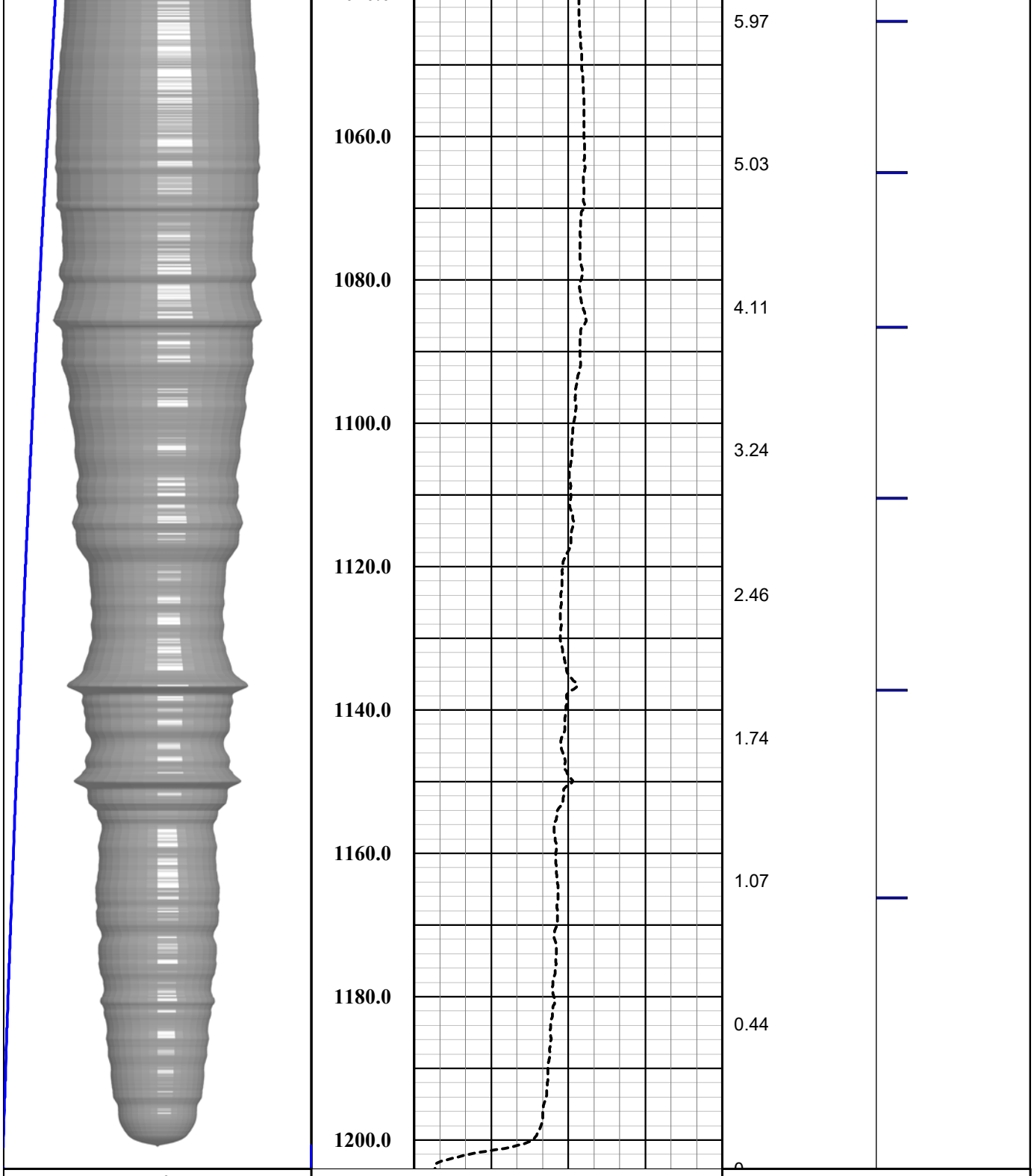
12.05
11.54
11.03
10.52
10.00
9.45
8.88
8.25
7.58
6.82

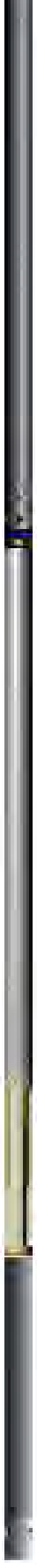


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft



Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-03
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final	**Caliper w/ Volume Calculation Summary**

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

NATIONAL DRILLING and FLORENCE COPPER

O-03

Friday - May 5, 2017

Southwest Exploration Services, LLC
borehole geophysics and video services

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

Company: NATIONAL DRILLING **Well Owner:** FLORENCE COPPER

County: PINAL **State:** Arizona **Country:** United States

Well Number: O-03 **Survey Date:** Friday - May 5, 2017 **Magnetic Declination:** Declination Correction Not Used

Field: FLORENCE **Drift Calculation Methodology:** Balanced Tangential Method

Location:

Remarks:

Witness: LAUREN - H&A **Vehicle No.:** 900 **Invoice No.:** 7969 **Operator:** E. TURNER **Well Depth:** 1200 Feet **Casing size:** 12.25 Inches

Tool: Compass - 3082 **Lat.:** **Long.:** **Sec.:** **Twp.:** **Rge.:**

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BGR., degrees
20	1.33	198.53	20.00						
40	0.81	177.14	39.99	-0.361	-0.067	0.42	3.36	0.37' (4.44")	190.50
60	0.32	222.01	59.98	-0.544	-0.097	0.96	6.90	0.55' (6.60")	190.10
80	0.82	082.57	79.97	-0.567	0.008	0.84	16.96	0.57' (6.84")	179.20
100	0.87	089.18	99.97	-0.546	0.302	0.42	1.04	0.62' (7.44")	151.10
120	0.70	096.94	119.96	-0.559	0.575	0.14	1.22	0.80' (9.60")	134.20
140	0.82	113.02	139.95	-0.630	0.828	0.43	2.53	1.04' (12.48")	127.30
160	0.81	144.69	159.94	-0.801	1.041	0.83	4.93	1.31' (15.72")	127.60
180	0.34	124.81	179.93	-0.950	1.171	0.95	3.12	1.51' (18.12")	129.00
200	0.85	118.68	199.92	-1.055	1.350	0.38	0.97	1.71' (20.52")	128.00
220	0.62	169.32	219.91	-1.233	1.500	1.00	7.73	1.94' (23.28")	129.40
240	0.41	208.90	239.90	-1.402	1.485	1.00	6.12	2.04' (24.48")	133.30
260	0.31	197.91	259.89	-1.516	1.434	0.35	1.73	2.09' (25.08")	136.60
280	0.27	170.77	279.88	-1.614	1.425	0.93	4.24	2.15' (25.80")	138.60
300	0.37	166.15	299.87	-1.723	1.448	0.79	0.73	2.25' (27.00")	140.00
320	0.35	154.57	319.86	-1.841	1.490	0.51	1.82	2.37' (28.44")	141.00
340	0.25	168.62	339.85	-1.939	1.525	0.01	2.21	2.47' (29.64")	141.80
360	0.27	149.60	359.84	-2.022	1.557	0.54	2.99	2.55' (30.60")	142.40

True Vertical Depth: 1199.38' **Final Drift Distance:** 16.83' (201.96") **Final Drift Bearing:** 134.50°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

O-03

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
380	0.46°	147.18°	379.83	-2.130	1.624	0.74	0.38	2.68' (32.16")	142.70
400	0.25°	151.34°	399.82	-2.236	1.688	0.89	0.66	2.80' (33.60")	142.90
420	0.29°	187.43°	419.81	-2.324	1.702	0.22	5.60	2.88' (34.56")	143.80
440	0.29°	186.30°	439.80	-2.424	1.690	0.97	0.18	2.96' (35.52")	145.10
460	0.29°	155.74°	459.79	-2.520	1.705	0.97	4.76	3.04' (36.48")	145.90
480	0.35°	158.55°	479.78	-2.623	1.748	0.15	0.44	3.15' (37.80")	146.30
500	0.40°	140.70°	499.77	-2.734	1.815	0.83	2.80	3.28' (39.36")	146.40
520	0.17°	164.41°	519.76	-2.817	1.867	0.61	3.71	3.38' (40.56")	146.50
540	0.24°	076.11°	539.75	-2.836	1.916	0.71	12.59	3.42' (41.04")	146.00
560	0.74°	083.24°	559.74	-2.811	2.085	0.25	1.13	3.50' (42.00")	143.40
580	1.00°	098.23°	579.73	-2.821	2.386	0.76	2.36	3.69' (44.28")	139.80
600	0.97°	109.26°	599.72	-2.902	2.719	0.51	1.74	3.98' (47.76")	136.90
620	0.78°	123.89°	619.71	-3.034	2.992	0.71	2.30	4.26' (51.12")	135.40
640	0.76°	126.80°	639.70	-3.189	3.211	0.10	0.46	4.53' (54.36")	134.80
660	0.65°	130.25°	659.69	-3.342	3.404	0.84	0.54	4.77' (57.24")	134.50
680	0.70°	131.36°	679.68	-3.496	3.582	0.82	0.18	5.01' (60.12")	134.30
700	0.79°	127.05°	699.67	-3.660	3.784	0.21	0.68	5.26' (63.12")	134.00
720	0.87°	119.18°	719.66	-3.817	4.027	0.57	1.24	5.55' (66.60")	133.50
740	1.15°	107.84°	739.65	-3.953	4.351	0.27	1.79	5.88' (70.56")	132.30
760	1.15°	105.73°	759.64	-4.069	4.735	0.93	0.33	6.24' (74.88")	130.70
780	1.09°	098.29°	779.63	-4.151	5.116	0.62	1.17	6.59' (79.08")	129.10
800	0.72°	100.84°	799.62	-4.202	5.428	0.96	0.41	6.86' (82.32")	127.70
820	0.80°	132.44°	819.61	-4.320	5.654	0.10	4.92	7.12' (85.44")	127.40
840	1.27°	132.96°	839.60	-4.565	5.919	0.33	0.11	7.48' (89.76")	127.60
860	1.54°	124.27°	859.59	-4.867	6.303	0.54	1.37	7.96' (95.52")	127.70
880	1.60°	121.48°	879.58	-5.164	6.763	0.50	0.44	8.51' (102.12")	127.40
900	1.17°	130.08°	899.57	-5.441	7.157	0.46	1.36	8.99' (107.88")	127.20
920	0.96°	157.14°	919.56	-5.727	7.378	0.66	4.23	9.34' (112.08")	127.80
940	1.18°	163.77°	939.55	-6.079	7.501	0.09	1.05	9.65' (115.80")	129.00
960	1.25°	161.00°	959.54	-6.483	7.630	0.25	0.44	10.01' (120.12")	130.40
980	1.24°	165.57°	979.53	-6.899	7.755	0.99	0.72	10.38' (124.56")	131.70
1,000	1.43°	162.45°	999.52	-7.347	7.884	0.94	0.49	10.78' (129.36")	133.00
1,020	1.70°	155.07°	1,019.51	-7.854	8.084	0.96	1.16	11.27' (135.24")	134.20

True Vertical Depth: 1199.38' **Final Drift Distance: 16.83' (201.96")** **Final Drift Bearing: 134.50°**

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC
(480) 926-4558

O-03

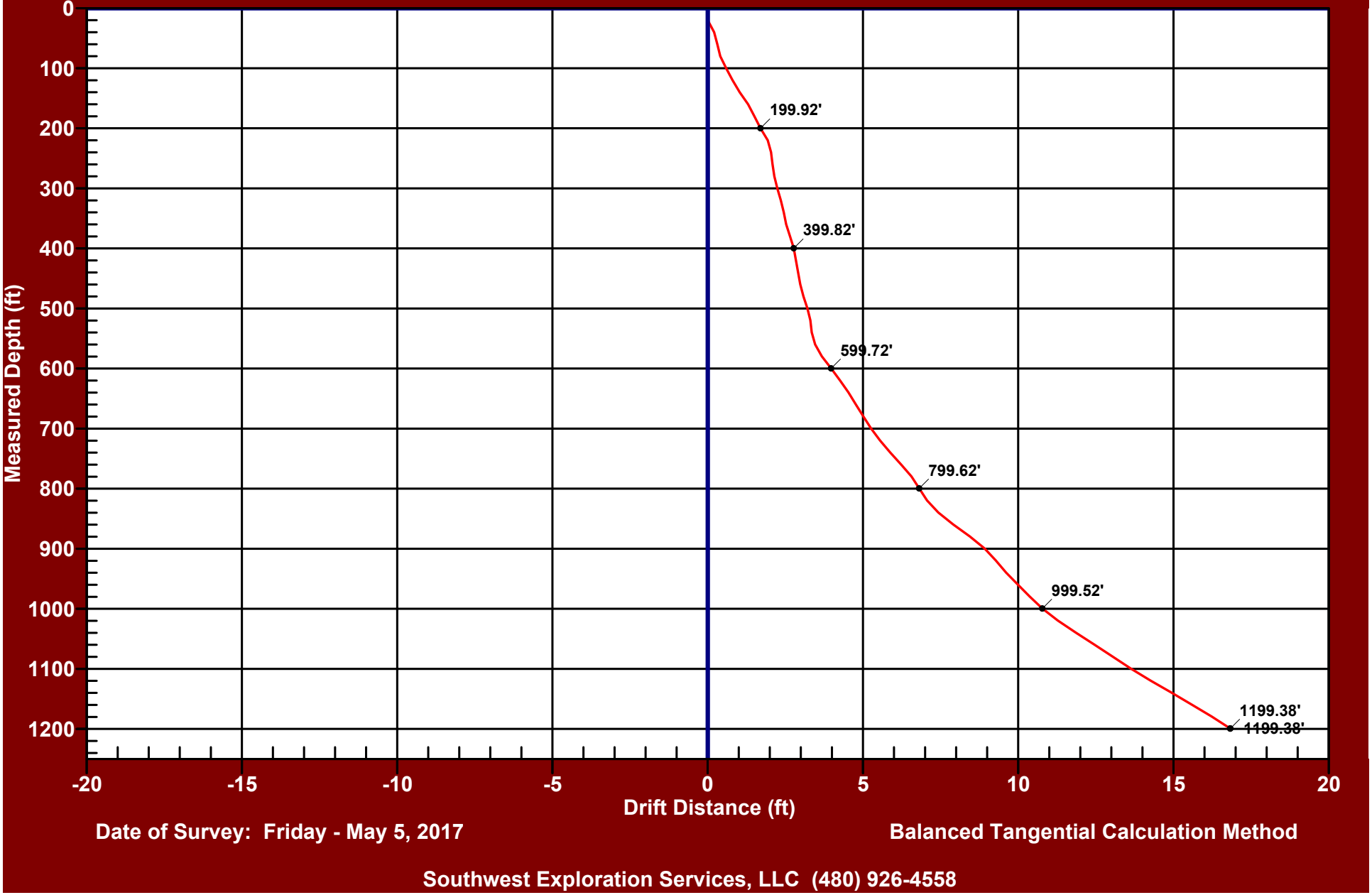
MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
1,040	1.73°	141.08°	1,039.50	-8.358	8.399	0.46	2.20	11.85' (142.20")	134.90
1,060	1.76°	142.86°	1,059.49	-8.838	8.774	0.25	0.28	12.45' (149.40")	135.20
1,080	1.69°	151.80°	1,079.48	-9.343	9.099	0.92	1.41	13.04' (156.48")	135.80
1,100	1.77°	143.89°	1,099.47	-9.852	9.420	0.09	1.25	13.63' (163.56")	136.30
1,120	1.92°	137.87°	1,119.45	-10.350	9.827	0.18	0.95	14.27' (171.24")	136.50
1,140	1.89°	130.86°	1,139.43	-10.814	10.301	0.99	1.11	14.94' (179.28")	136.40
1,160	1.94°	119.30°	1,159.41	-11.195	10.846	0.66	1.82	15.59' (187.08")	135.90
1,180	1.89°	119.47°	1,179.39	-11.523	11.428	0.90	0.03	16.23' (194.76")	135.20
1,200	1.73°	113.09°	1,199.38	-11.804	11.993	0.46	1.01	16.83' (201.96")	134.50

True Vertical Depth: 1199.38' **Final Drift Distance: 16.83' (201.96")** **Final Drift Bearing: 134.50°**

PLANE OF DRIFT VIEW - O-03

NATIONAL DRILLING
FLORENCE COPPER

Drift Distance = 16.83 Feet Drift Bearing = 134.5 Degrees True Vertical Depth = 1199.38 Feet



Date of Survey: Friday - May 5, 2017

Balanced Tangential Calculation Method

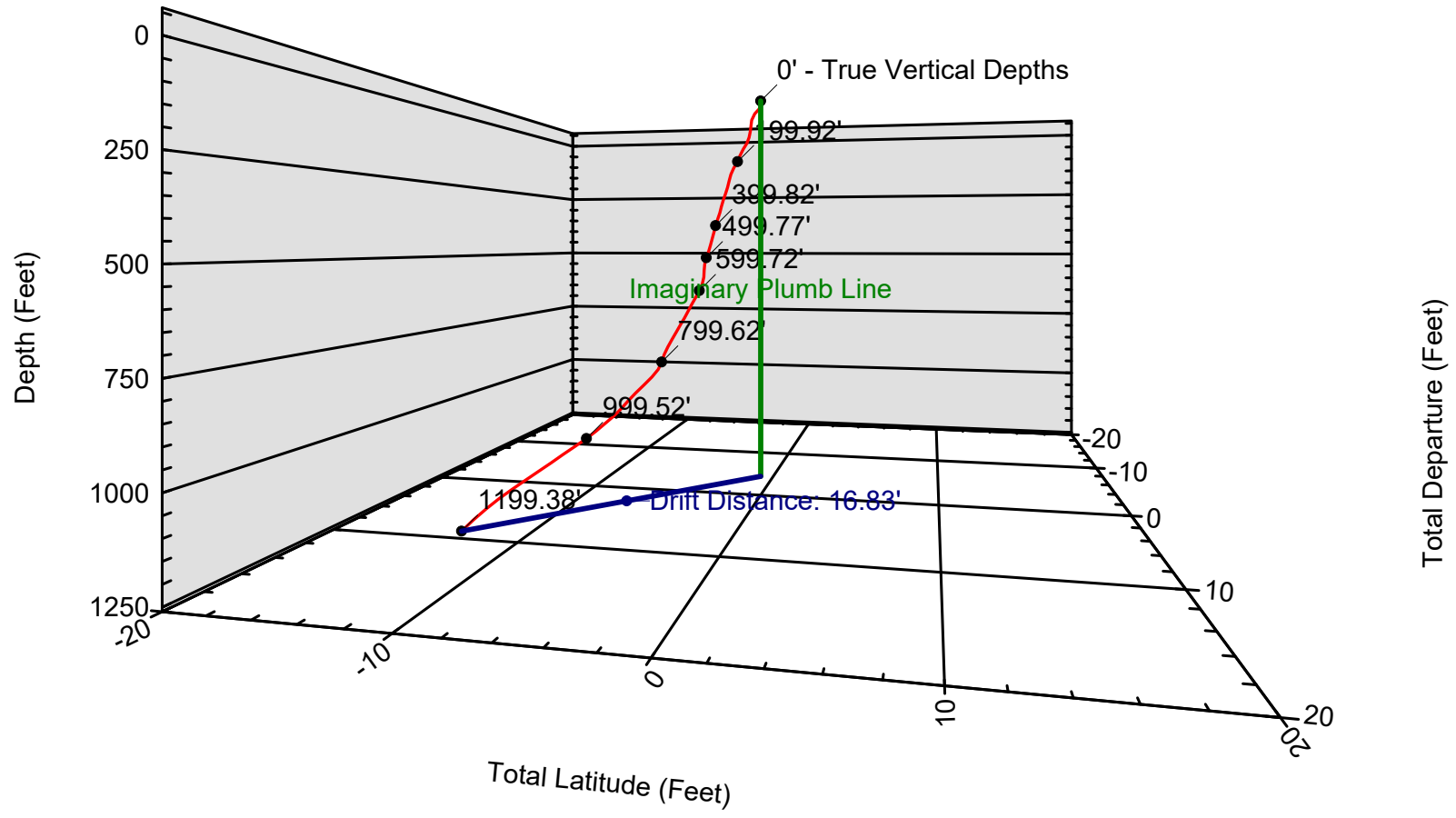
Southwest Exploration Services, LLC (480) 926-4558

3D PROJECTION VIEW - O-03

NATIONAL DRILLING
FLORENCE COPPER

Drift Distance = 16.83 Feet Drift Bearing = 134.5 Degrees True Vertical Depth = 1199.38 Feet

281.0



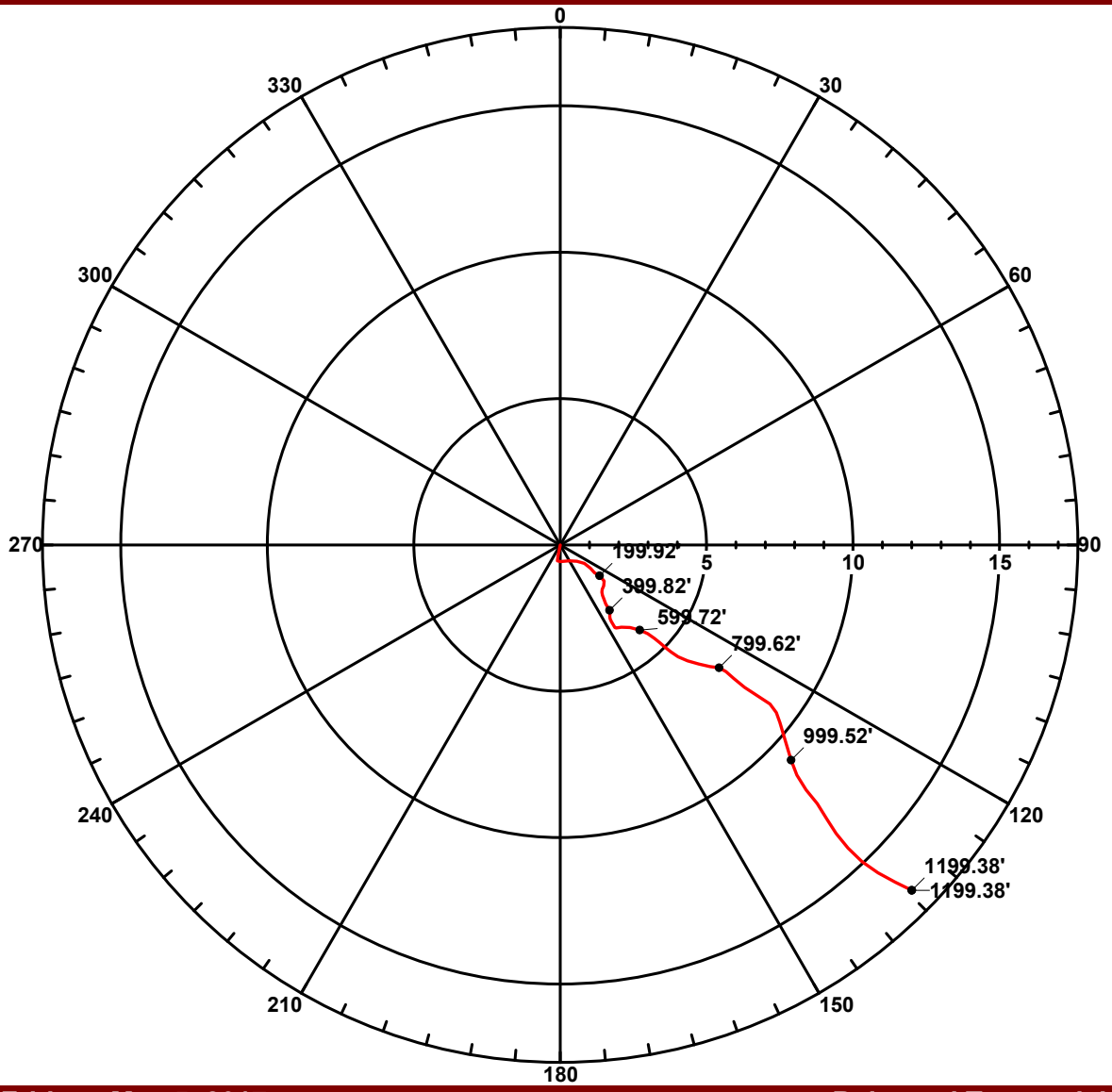
Date of Survey: Friday - May 5, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - O-03

NATIONAL DRILLING
FLORENCE COPPER

Drift Distance = 16.83 Feet Drift Bearing = 134.5 Degrees True Vertical Depth = 1199.38 Feet



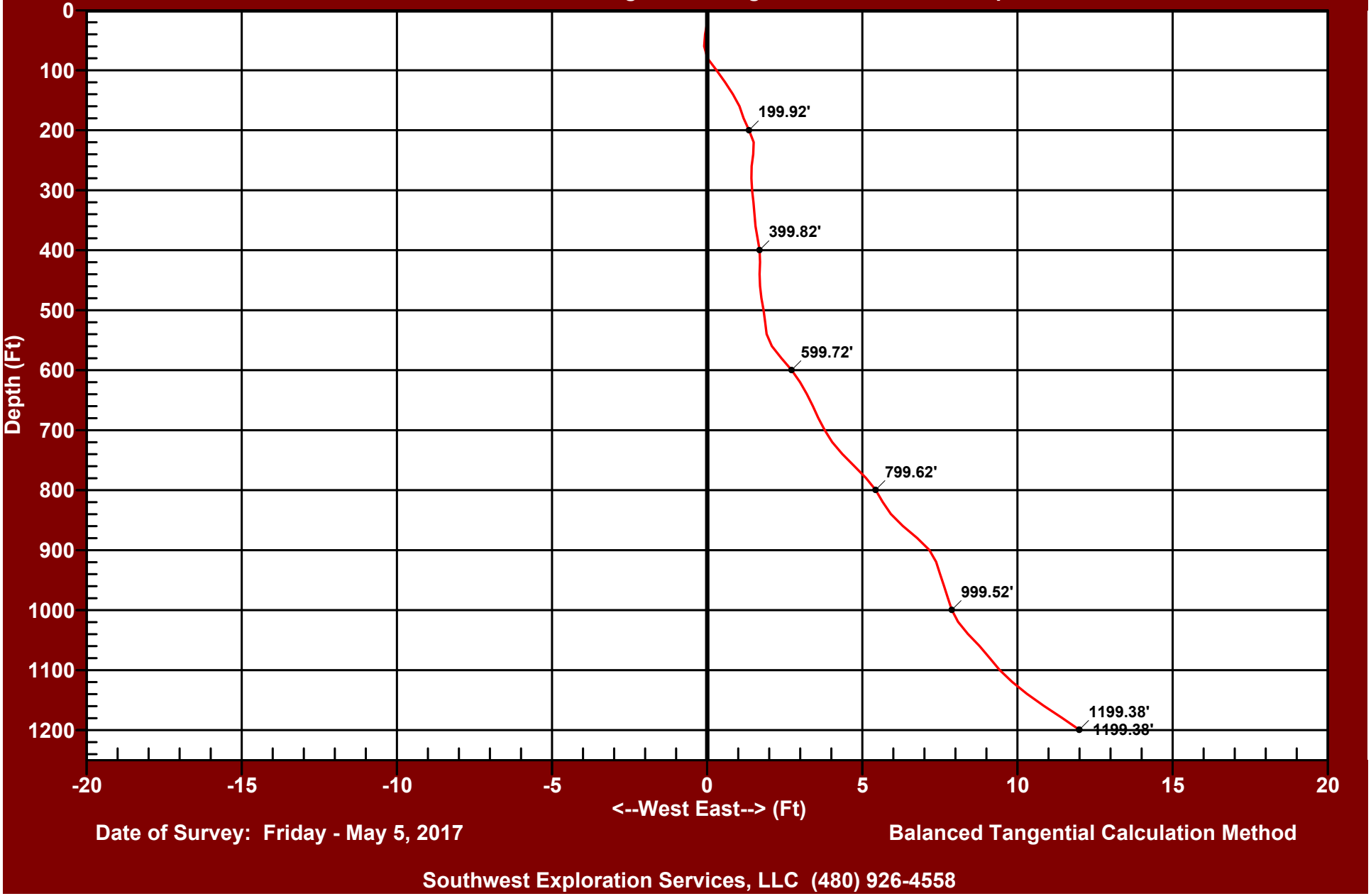
Date of Survey: Friday - May 5, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

EASTING RECTANGULAR VIEW - O-03

NATIONAL DRILLING
FLORENCE COPPER

Drift Distance = 16.83 Feet Drift Bearing = 134.5 Degrees True Vertical Depth = 1199.38 Feet



Date of Survey: Friday - May 5, 2017

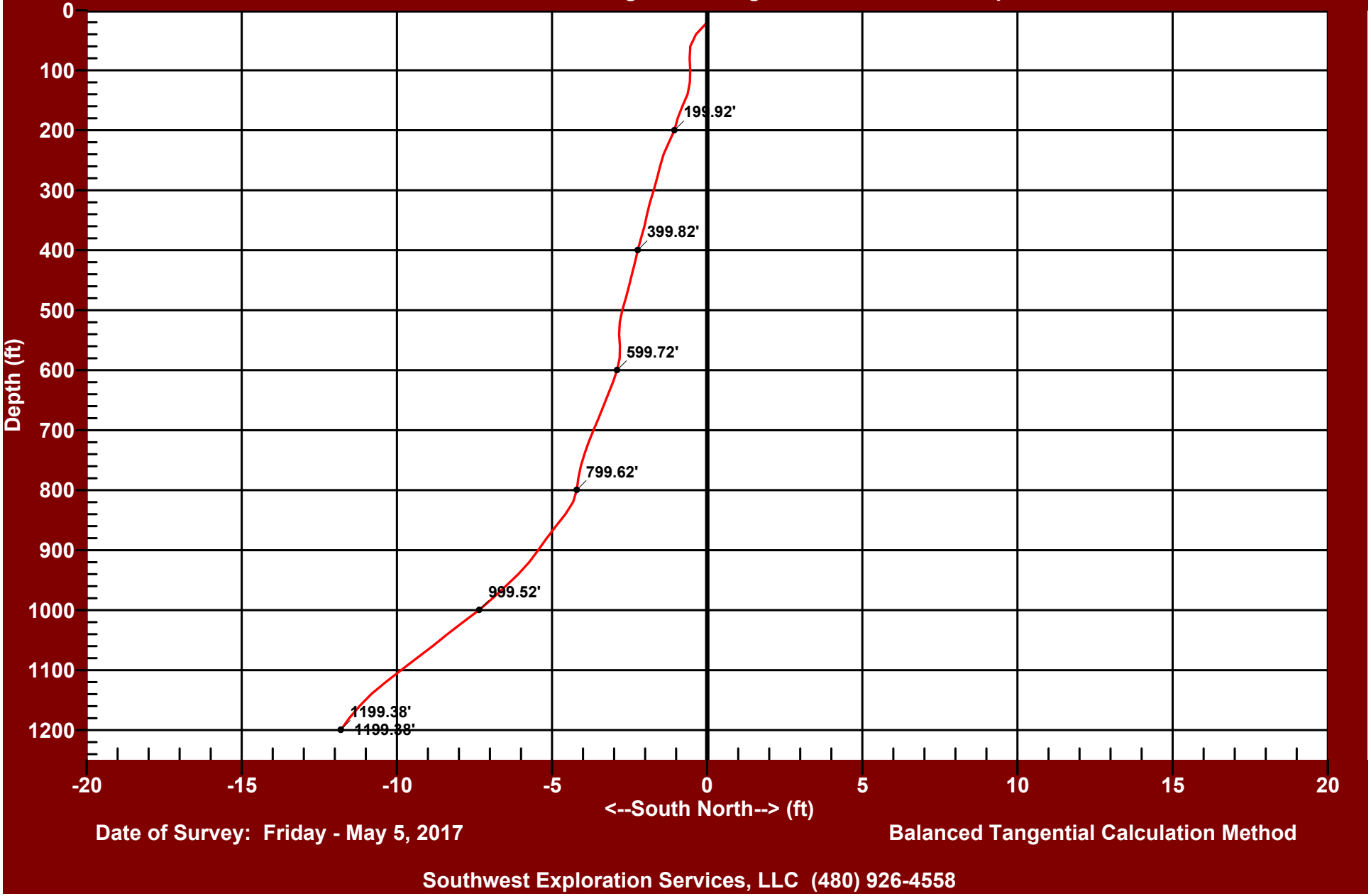
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

NORTHING RECTANGULAR VIEW - O-03

NATIONAL DRILLING
FLORENCE COPPER

Drift Distance = 16.83 Feet Drift Bearing = 134.5 Degrees True Vertical Depth = 1199.38 Feet



Date of Survey: Friday - May 5, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

APPENDIX F

Cement Bond Log Summary

WELL O-03

Geophysical Log Summary

COMPANY:	FLORENCE COPPER COMPANY	Logging Engineer:	VARIOUS
FIELD:	FLORENCE COPPER SITE	Date Logged:	VARIOUS
WELL ID:	O-03	Processed By:	K.M / B.C.
COUNTY:	PINAL STATE: ARIZONA	Date Processed:	08-24-18

Southwest Exploration Services, LLC
borehole geophysics & video services

HALEY ALDRICH

O-03 Sonic CBL with Density Summary

Depth
1in:20ft

1-Arm Caliper
Cased 6-3-17
0 Inches 10

Comp Density
Cased 6-3-17
1 g/cc 3

Compensation
Cased 6-3-17
-2 g/cc 2

RX1 - VDL (60mm)
Open 5-5-17
100 uSec 1000

RX1 - TT (60mm)
Open 5-5-17
100 uSec 1000

RX1 - VDL
Cased 6-3-17
100 uSec 1020

RX1 - TT
Cased 6-3-17
100 uSec 1020

RX4 - VDL
Cased 6-3-17
100 uSec 1020

RX4 - TT
Cased 6-3-17
100 uSec 1020

Velocity Analysis
Cased 6-3-17
40 uSec/ft 220

P-Wave Slow
Cased 6-3-17
40 uSec/ft 220

Steel
40 us/ft 220

FRP
40 us/ft 220

Cement

Near Density
Cased 6-3-17
1 g/cc 3

Far Density
Cased 6-3-17
1 g/cc 3

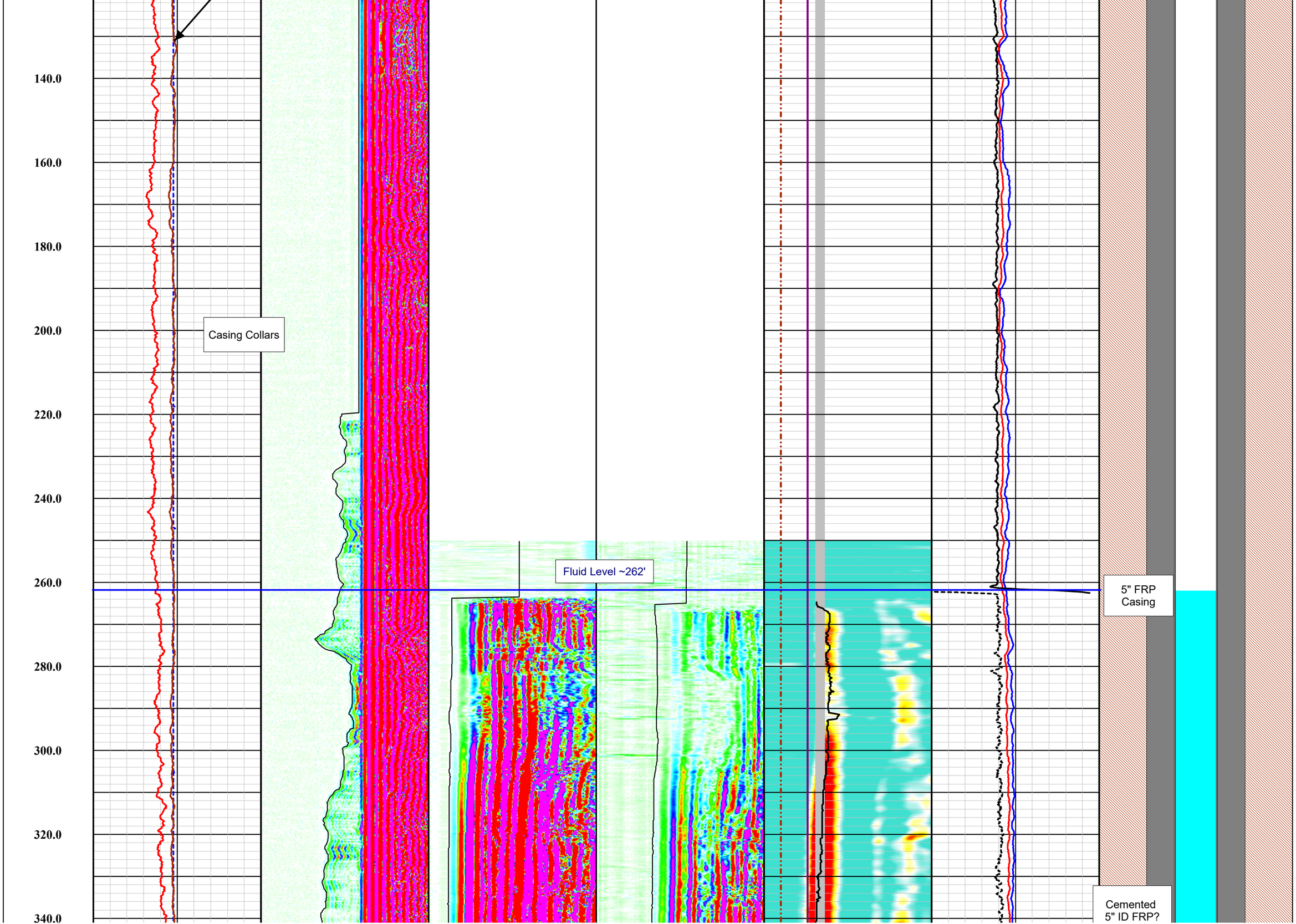
4 Pi Density (Dry)
Cased 6-3-17
1000 CPS 100

4 Pi Density (Wet)
Cased 6-3-17
200 CPS 0

Well Diagram

0.0
20.0
40.0
60.0
80.0
100.0
120.0

Casing Collars


140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
Casing Collars
Fluid Level ~262'
5" FRP
Casing
Cemented
5" ID FRP?

360.0

380.0

400.0

420.0

440.0

460.0

480.0

Adapter PVC to FRP ~240'

~95 us/ft consistent with velocity of cement @ ~10,500 fps

Bentonite Seal or Void

Free 5" FRP Sand pack or Bentonite seal behind casing

Top Sch80 PVC Screen ~452'

5" Sch80 PVC Screen

Version 8-24-18, EJB

	-2 g/cc 2 Cased 6-3-17 **Compensation**				Cement 40 us/ft 220 FRP 40 us/ft 220 Steel	200 CPS 0 Cased 6-3-17 **4 Pi Density (Wet)** 1000 CPS 100 Cased 6-3-17 **4 Pi Density (Dry)**	
	1 g/cc 3 Cased 6-3-17 **Comp Density**	100 uSec 1000 Open 5-5-17 **RX1 - TT (60mm)**	100 uSec 1020 Cased 6-3-17 **RX1 - TT**	100 uSec 1020 Cased 6-3-17 **RX4 - TT**	40 uSec/ft 220 Cased 6-3-17 **P-Wave Slow**	1 g/cc 3 Cased 6-3-17 **Far Density**	
	0 Inches 10 Cased 6-3-17 **1-Arm Caliper**	100 uSec 1000 Open 5-5-17 **RX1 - VDL (60mm)**	100 uSec 1020 Cased 6-3-17 **RX1 - VDL**	100 uSec 1020 Cased 6-3-17 **RX4 - VDL**	40 uSec/ft 220 Cased 6-3-17 **Velocity Analysis**	1 g/cc 3 Cased 6-3-17 **Near Density**	**Well Diagram**

1in:20ft

Depth

O-03 Sonic CBL with Density Summary

APPENDIX G

SAPT Documentation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator FLORENCE COPPER, INC
Address 1575 W. HUNT HWY
FLORENCE, AZ 85132
Well Name O-03

State Permit No. P-101704
USEPA Permit No. R9UIC-AZ3-FY11-1
Date of Test 8/7/2017
Well Type CLASS III OBSERVATION

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter of Section 28 ; Range 9E ; Township 4S ; County PINAL ;

Company Representative IAN REAM ; Field Inspector LAUREN CANDREVA ;

Type of Pressure Gauge Pressure transducer with data logger inch face; 300 psi full scale; 0.001 psi increments;

New Gauge? Yes ☑ No ☐ If no, date of calibration ____ Calibration certification submitted? Yes ☐ No ☑

TEST RESULTS
Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.
For Class II wells, annulus pressue should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.
Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☐ No ☑
2-year test for TA'd wells on time? Yes ☐ No ☑
After rework? Yes ☐ No ☑
Newly permitted well? Yes ☑ No ☐

Pressure (in psig)

Time	Annulus	Tubing
14:32	120.13	same
14:42	119.51	same
14:52	118.95	same
15:02	118.44	same

Casing size 5" - NOMINAL
Tubing size 2"
Packer type INFLATABLE PACKER
Packer set @ 424.9
Top of Permitted Injection Zone 425
Is packer 100 ft or less above top of Injection Zone ? Yes ☑ No ☐
If not, please submit a justification.
Fluid return (gal.) 0.74
Comments: Two tests conducted to confirm results, data for both tests included in attached chart and table

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.05 6.01 psi
Test Period Pressure change 1.69 psi

Test Passed ☑ Test Failed ☐

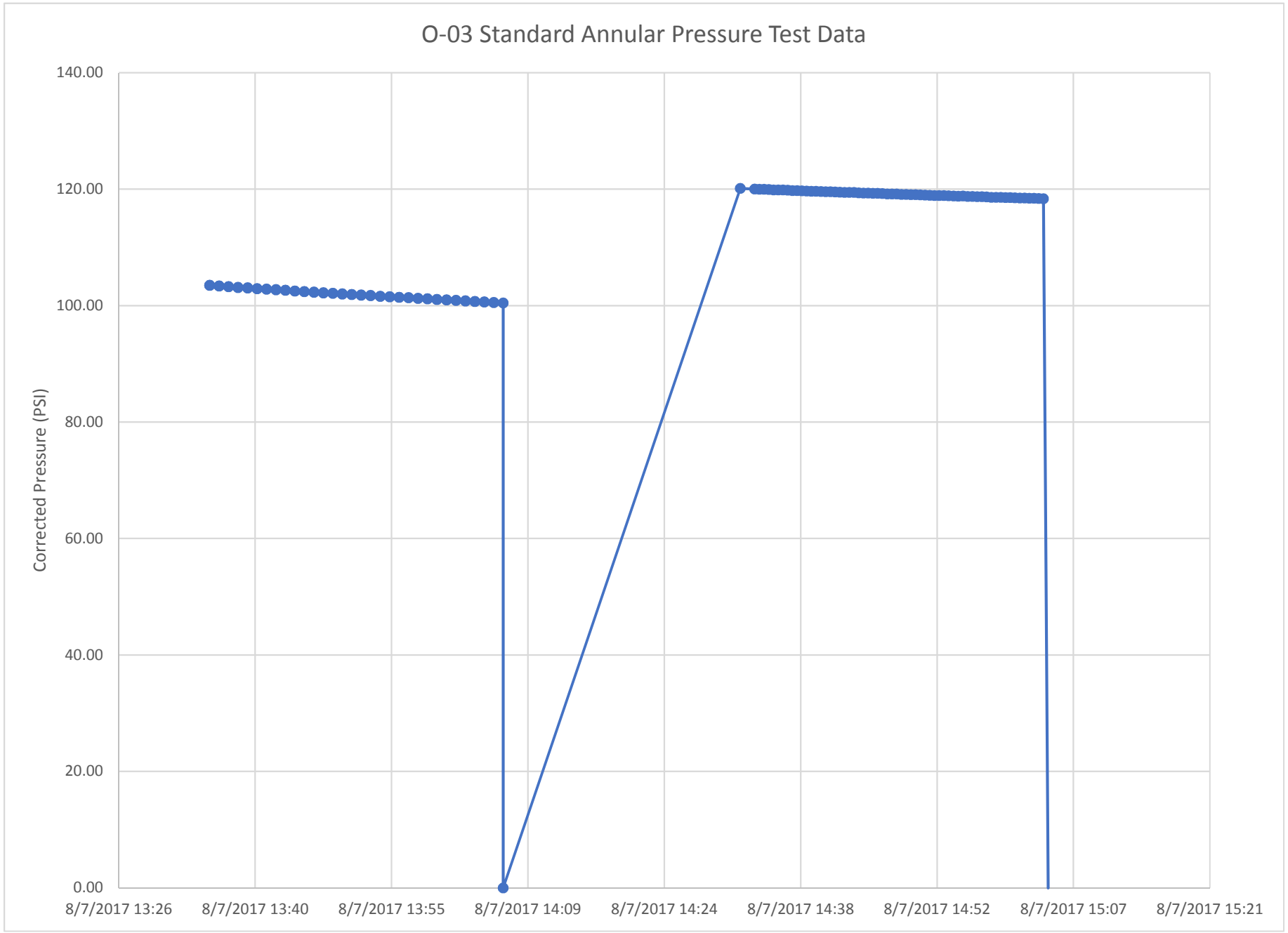
If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream
Printed Name of Company Representative

Signature of Company Representative

9-12-2013
Date


O-03 Standard Annular Pressure Test Data
Corrected Pressure (PSI)
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
8/7/2017 13:26
8/7/2017 13:40
8/7/2017 13:55
8/7/2017 14:09
8/7/2017 14:24
8/7/2017 14:38
8/7/2017 14:52
8/7/2017 15:07
8/7/2017 15:21

Well O-03 SAPT Data		
Transducer Serial Number:	519257	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
8/7/2017 13:36	117.364	103.50
8/7/2017 13:36	117.315	103.45
8/7/2017 13:37	117.232	103.37
8/7/2017 13:37	117.202	103.34
8/7/2017 13:38	117.15	103.29
8/7/2017 13:38	117.088	103.22
8/7/2017 13:39	117.032	103.17
8/7/2017 13:39	116.96	103.10
8/7/2017 13:40	116.955	103.09
8/7/2017 13:40	116.878	103.01
8/7/2017 13:41	116.806	102.94
8/7/2017 13:41	116.751	102.89
8/7/2017 13:42	116.722	102.86
8/7/2017 13:42	116.679	102.82
8/7/2017 13:43	116.618	102.75
8/7/2017 13:43	116.567	102.70
8/7/2017 13:44	116.507	102.64
8/7/2017 13:44	116.462	102.60
8/7/2017 13:45	116.379	102.52
8/7/2017 13:45	116.35	102.49
8/7/2017 13:46	116.286	102.42
8/7/2017 13:46	116.241	102.38
8/7/2017 13:47	116.212	102.35
8/7/2017 13:47	116.123	102.26
8/7/2017 13:48	116.093	102.23
8/7/2017 13:48	116.031	102.17
8/7/2017 13:49	115.975	102.11
8/7/2017 13:49	115.961	102.10
8/7/2017 13:50	115.896	102.03
8/7/2017 13:50	115.832	101.97
8/7/2017 13:51	115.781	101.92
8/7/2017 13:51	115.757	101.89
8/7/2017 13:52	115.692	101.83
8/7/2017 13:52	115.634	101.77
8/7/2017 13:53	115.62	101.76
8/7/2017 13:53	115.545	101.68
8/7/2017 13:54	115.493	101.63
8/7/2017 13:54	115.455	101.59
8/7/2017 13:55	115.409	101.55
8/7/2017 13:55	115.366	101.50
8/7/2017 13:56	115.302	101.44

Well O-03 SAPT Data		
Transducer Serial Number:	519257	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
8/7/2017 13:56	115.29	101.43
8/7/2017 13:57	115.246	101.38
8/7/2017 13:57	115.196	101.33
8/7/2017 13:58	115.145	101.28
8/7/2017 13:58	115.101	101.24
8/7/2017 13:59	115.052	101.19
8/7/2017 13:59	115.018	101.15
8/7/2017 14:00	114.933	101.07
8/7/2017 14:00	114.902	101.04
8/7/2017 14:01	114.878	101.01
8/7/2017 14:01	114.821	100.96
8/7/2017 14:02	114.792	100.93
8/7/2017 14:02	114.732	100.87
8/7/2017 14:03	114.691	100.83
8/7/2017 14:03	114.642	100.78
8/7/2017 14:04	114.588	100.72
8/7/2017 14:04	114.564	100.70
8/7/2017 14:05	114.494	100.63
8/7/2017 14:05	114.473	100.61
8/7/2017 14:06	114.414	100.55
8/7/2017 14:06	114.402	100.54
8/7/2017 14:07	114.315	100.45
8/7/2017 14:07	13.864	0.00
8/7/2017 14:32	133.992	120.13
8/7/2017 14:33	133.881	120.02
8/7/2017 14:34	133.858	119.99
8/7/2017 14:34	133.836	119.97
8/7/2017 14:35	133.804	119.94
8/7/2017 14:35	133.74	119.88
8/7/2017 14:36	133.744	119.88
8/7/2017 14:36	133.724	119.86
8/7/2017 14:37	133.689	119.83
8/7/2017 14:37	133.626	119.76
8/7/2017 14:38	133.604	119.74
8/7/2017 14:38	133.591	119.73
8/7/2017 14:39	133.545	119.68
8/7/2017 14:39	133.513	119.65
8/7/2017 14:40	133.477	119.61
8/7/2017 14:40	133.465	119.60
8/7/2017 14:41	133.408	119.54
8/7/2017 14:41	133.409	119.55

Well O-03 SAPT Data		
Transducer Serial Number:	519257	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
8/7/2017 14:42	133.377	119.51
8/7/2017 14:42	133.333	119.47
8/7/2017 14:43	133.307	119.44
8/7/2017 14:43	133.289	119.43
8/7/2017 14:44	133.283	119.42
8/7/2017 14:44	133.214	119.35
8/7/2017 14:45	133.199	119.34
8/7/2017 14:45	133.172	119.31
8/7/2017 14:46	133.164	119.30
8/7/2017 14:46	133.13	119.27
8/7/2017 14:47	133.092	119.23
8/7/2017 14:47	133.047	119.18
8/7/2017 14:48	133.04	119.18
8/7/2017 14:48	133.02	119.16
8/7/2017 14:49	132.973	119.11
8/7/2017 14:49	132.955	119.09
8/7/2017 14:50	132.923	119.06
8/7/2017 14:50	132.898	119.03
8/7/2017 14:51	132.889	119.03
8/7/2017 14:51	132.846	118.98
8/7/2017 14:52	132.809	118.95
8/7/2017 14:52	132.773	118.91
8/7/2017 14:53	132.776	118.91
8/7/2017 14:53	132.748	118.88
8/7/2017 14:54	132.704	118.84
8/7/2017 14:54	132.677	118.81
8/7/2017 14:55	132.657	118.79
8/7/2017 14:55	132.676	118.81
8/7/2017 14:56	132.62	118.76
8/7/2017 14:56	132.605	118.74
8/7/2017 14:57	132.587	118.72
8/7/2017 14:57	132.556	118.69
8/7/2017 14:58	132.524	118.66
8/7/2017 14:58	132.47	118.61
8/7/2017 14:59	132.463	118.60
8/7/2017 14:59	132.435	118.57
8/7/2017 15:00	132.422	118.56
8/7/2017 15:00	132.415	118.55
8/7/2017 15:01	132.391	118.53
8/7/2017 15:01	132.353	118.49
8/7/2017 15:02	132.338	118.47

Well O-03 SAPT Data		
Transducer Serial Number:	519257	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
8/7/2017 15:02	132.308	118.44
8/7/2017 15:03	132.305	118.44
8/7/2017 15:03	132.249	118.39
8/7/2017 15:04	132.222	118.36
8/7/2017 15:04	13.847	-0.02

APPENDIX H

Well Development Field Forms

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-005
Well No.: O-03	Date: 5-16-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200 - 450
Pump Type/Setting (ft bls): Airlift	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1410								Tremie in @ 1180'
1414								air on,
1415	~20			0.1				return start
1417	~20			0.5				brown, drill fluids
1425	~20			0.7				brown
1435	~30			0.3				brown
1445								air off, need more
								tape on well head seal
1503								air on,
1506	40			1.8				brown, drill fluid
1515	40			0.2				brown
1525	45			0.1				light brown
1545	45			0.1				light brown
1600	45			0.1				light brown NTU
1625	45			0				467
1638	45			0				cloudy 281
1640								air off, recover hr
								5:00 pm
1700								air on
1703	45			0.1				cloudy 276
1708	50			0.1				Brown, drill fluids
1718	50			0				light brown
1728	60			0				light brown
1738	60			0				light brown
1740								air off

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 124687-005
Well No.: 0-03	Date: 5-17-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-450
Pump Type/Setting (ft bls): Airlift	Activity: C Airlift
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
0625	50							Air on, @ 1180'
0628	50			<0.1				Brown, drill fluid
0630	50			0.2				Brown, " "
0640	50			0				NTU = 281 cloudy
0645	50			0				= 266 cloudy
0647	50							air off
0715	50							Air on NTU
0719	50			0				cloudy 159
0730	50			0				light brown 660
0745	50			0				light brown OR
0800	50			0				light brown 441
0815	50			0				light brown 476
0830	50			0				light brown 407
0915	50			0				cloudy 95.2
0945	50			0				clear 34.8
1000	50			0				clear 22.8
1000								air off, injecting
								2 gal aqua-clear.
								1 gal @ 1180, 1080, 450,
								580, 350, 650, 580'
1300								Starting swab.
1405								End swab.
								Airlift tomorrow
5-18-17								
0834								Air on, 1180'
0838	50			0.1				light brown, NTU
0839	50			0				203
0841	50			0				Brown, drill fluids

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-005
Well No.: O-03	Date: 5-18-18
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-450
Pump Type/Setting (ft bls): Airlift	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
0852	50			0				Brown OR NTU
0910	50			0				brown OR
0955	50			0				brown OR
1030	50			0				brown OR
1100								Geo @ Drill Rig for well construction.
		Pump rig crew airlifted until return was clear with no sand.						
17:45								air off

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-005
Well No.: D-03	Date: 5/17/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Type/Setting (ft bls):	Activity: Development
How Q Measured: Stopwatch, 5 gallon bucket	H&A Personnel: S. Hansel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
1135	15	241.8		0.1	6.40	1267	30.1	cloudy	14.8 ~~56.9~~
1142	15	241.7		0.5	6.61	1246	29.5	cloudy	10.4
1200	15	241.5		0.1	6.67	1242	29.1	clear	7.91
1215	15	241.6		0.2	7.07	1233	28.5	clear	11.3
1220	15	241.7		0.0	7.14	1239	28.1	cloudy	64.2
1230	15	241.7		0.0	7.36	1241	27.9	cloudy	24.1
1245	15	241.4		0.0	7.62	1239	28.2	clear	13.6
1300	15	241.8		0.0	7.14	1234	28.7	clear	9.05
1305								Pump off	
1345								Pump on	
1347	15	240.3		0.0	7.28	1196	28.1	clear	7.91
1357	15	240.2		0.2	7.34	1233	28.6	cloudy	17.40
1415	15	241.2		0.0	7.62	1230	28.6	clear	9.31
1430	15	241.4		0.0	7.40	1231	28.9	clear	7.52
1435	~~15~~							Pump off	
1540	~~15~~							Pump on	
1550	15	240.2		0.0	7.48	1231	29.1	cloudy	41.4
1610	15	240.2		0.1	7.50	1234	29.9	cloudy	14.9
1630	15	240.2		0.0	7.54	1218	28.1	clear	10.4
1640	15	240.2		0.0	7.55	1215	27.5	clear	9.72
1645								Pump off	
1715								Pump on	
1720	15	240.1		0.0	7.0	1221	27.6	clear	11.2
1735	15	240.1		0.0	7.49	1221	27.5	clear	5.14
1750	15	240.2		0.0	7.64	1215	27.3	clear	5.45
1755								Pump off	
6									

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-005
Well No.: 6-03	Date: 5/30/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1700	Screen Interval (ft bls):
Pump Type/Setting (ft bls):	Activity: Development
How Q Measured: Stopwatch, 5 gallon bucket	H&A Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
610								Pump start	
615	17	237.6		0.3	7.57	1239	27.0	brown	89.0
630	17	237.6		0.1	7.49	1700	26.8	cloudy	28.7
645	17	237.8		0.1	7.31	1253	25.6	cloudy	13.4
700	17	237.4		0.0	7.01	1232	26.8	clear	4.61
705								Pump off	
1040								Pump on	
1047	17	236.5		0.3	7.40	1248	29.6	Brown	106.0
1055	17	236.5		0.1	7.63	1247	29.0	Cloudy	24.1
1120	17	236.6		0.0	7.5	1233	28.5	clear	5.41
1125								Pump off	
1155								Pump on	
1200	17	236.7		0.0	7.40	1253	29.8	cloudy	38.0
1215	17	236.6		0.0	7.49	1241	28.8	Clear	6.66
1225	17	236.6		0.0	7.68	1246	28.3	clear	2.37
1230								Pump off	
1300								Pump on	
1305	17	236.8		0.1	7.6	1248	29.3	cloudy	28.2
1310	17	236.8		0.0	7.68	1242	28.9	cloudy	16.7
1320	17	236.6		0.0	7.68	1224	28.6	clear	6.82
1325								Pump off	
~~1430~~	~~17~~			~~0.0~~	~~6.45~~	~~12~~		Pump on	
1435	17	236.7		0.0	6.45	1240	30.3	cloudy	20.8
1440	17	236.7		0.0	6.70	1231	29.4	clear	9.47
1450	17	236.7		0.0	6.60	1234	28.7	clear	2.98
1455								Pump off	
1530								Pump on	
1535	17	236.7		0.1	6.86	1219	29.1	Cloudy	67.5

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-005
Well No.: 0-03	Date: 5/20/17 - 5/21/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Type/Setting (ft bls):	Activity: Development
How Q Measured: Stopwatch, 5 gal bucket	H&A Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
1540	17	236.7		0.0	6.85	1227	28.9	cloudy	19.1
1550	17	236.7		0.0	7.31	1235	28.4	clear	3.78
1555								Pump off	
1635								Pump on	
1640	17	236.6		0.0	6.64	1244	29.7	cloudy	37.2
1645	17	236.6		0.0	6.72	1232	28.7	clear	5.93
1650	17	236.6		0.0	6.89	1240	28.5	clear	3.62
1655								Pump off	
1715								Pump on	
1720		236.6		0.2	6.71	1241	28.3	cloudy	55.2
1725		236.6		0.1	6.79	1234	28.1	cloudy	22.9
1735		236.6		0.0	7.21	1224	27.7	clear	4.8
1750		236.6		0.0	6.83	1242	27.4	clear	2.18
1755								Pump off	
605	~~17~~	~~235.5~~						Pump on	
610	17	235.5		0.1	6.81	1227	26.6	clear	11.1
619	17	235.5		0.0	6.84	1235	26.4	clear	9.43
620	17	235.5		0.0	6.75	1257	26.1	clear	8.55
625								Pump off	
650								Pump on	
658	17	235.5		0.1	6.80	1185	27.8	cloudy	21.7
705	17	235.5		0.0	6.86	1240	27.4	clear	6.71
710	17	235.5		0.0	7.10	1242	27.3	clear	2.17
712								Pump off	
745								Pump on	
750	17	235.5		0.0	6.65	1242	29.0	clear	11.0
755	17	235.5		0.0	6.73	1246	27.9	clear	4.74

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129697-005
Well No.: 0-03	Date: 5/21/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Type/Setting (ft bls):	Activity: Development
How Q Measured: Stopwatch, 5 gal bucket	H&A Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments NTU
800	17	235.5		0.0	6.81	12,36	27.9	Clear 4.90
805								Pump off
835								~~Cloudy 18.2~~ Pump on
840	17	235.6		0.1	6.89	1228	29.1	Cloudy 18.2
845	17	235.6		0.1	6.79	1237	28.3	cloudy 17.9
850	17	235.6		0.0	7.07	1240	28.2	clear 3.52
855								Pump off
925								Pump on
930	17	235.6		0.1	6.93	1234	29.5	Cloudy 23.52
935	17	235.6		0.0	7.11	1247	29.2	Clear 3.4
940	17	235.6		0.0	~~1247~~	1245	28.4	Clear 4.64
945	~~17~~				7.16			Pump off
1025	~~17~~							Pump on
1030	17	235.6		0.1	7.02	1234	29.4	Cloudy 21.0
1035	17	235.6		0.0	7.08	1235	28.8	Clear 3.44
1040	~~17~~	235.6		0.0	7.28	1237	28.0	clear 3.47
1045								Pump off
1195								Pump on
1130	17	235.4		0.0	6.87	1234	29.6	Cloudy 20.3
1135	17	235.4		0.0	6.93	1235	29.0	clear 5.84
1140	17	235.4		0.0	7.16	1242	28.6	clear 1.22
1145								Pump off
1205								Pump on
1210	17	235.8		0.0	7.08	1244	29.4	clear 14.2
1215	17	235.8		0.0	7.05	1242	29.1	clear 3.2
1220	~~1230~~	17	235.8		0.0	7.23	1238	28.9	clear 1.22
1225	~~1230~~							Pump off
1255								Pump on

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCT	Project No.: 129687-005
Well No.: CI-03	Date: 5/21/17
Location:	Measuring Point: 1.45ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Type/Setting (ft bls):	Activity: Development
How Q Measured: Stopwatch 5 gal bucket	H&A Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments NTU
1300	17	235.6		0.1	6.96	1240	29.6	cloudy 19.5
1304	17	235.6		0.0	7.06	1236	29.3	clear 4.05
1310	17	235.6		0.0	7.25	1246	29.1	clear 1.27
1315								Pump off
1345								Pump on
1350	17	235.4		0.0	7.01	1245	29.8	clear 9.05
1355	17	235.4		0.0	7.08	1233	29.4	clear 2.67
1400								Pump off
1430								Pump on
1435	17	235.4		0.0	7.07	1241	29.4	clear 13.5
1440	17	235.4		0.0	7.23	1242	29.0	clear 1.14
1445								Pump off
1515								Pump on
1520	17	235.3		0.1	7.10	1240	29.4	cloudy 41.3
1525	17	235.3		0.0	7.26	1238	29.0	clear 1.29
1530								Pump off
1600								Pump on
1605	17	235.3		0.0	7.20	1227	28.9	cloudy 26.8
1610	17	235.3		0.0	7.28	1240	28.8	clear 2.98
1615								Pump off
1645								Pump on
1650	17	235.4		0.0	7.11	1239	28.8	cloudy 18.2
1655	17	235.4		0.0	7.22	1236	28.7	clear 3.07
1700				~~0.0~~				Pump off
1730								Pump on
1735	17	235.2		0.0	7.19	1240	28.1	cloudy 17.1
1740	17	235.2		0.0	7.37	1231	28.2	clear 1.93
1745								Pump off

Comments:

HALEY ALDRICH

PUMPING TEST/DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-005
Well No.: O-03	Date: 5/22/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Setting (ft bls):	Pump Type: Development
How Q Measured: Stopwatch, 5 gal bucket	Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ml/L)	pH	Sp. Cond. (mmhos/cm)	Temp. °F	Comments
602								Pump on
607	17	234.6		0.1	6.78	1235	27.0	cloudy 71.3
613	17	234.6		0.0	6.81	1226	27.1	clear 12.3
618	17	234.6		0.0	6.84	1223	27.4	clear 9.04
620								Pump off
640								Pump on
645	17	234.6		0.1	6.96	1246	27.3	cloudy 27.7
650	17	234.6		0.0	7.08	1211	27.6	clear 3.17
655								Pump off
710								Pump on
715	17	235.0		0.1	6.97	1215	27.9	cloudy 22.2
720	17	235.0		0.0	7.19	1246	27.5	clear 1.12
725								Pump off
745								Pump on
750	17	234.8		0.0	7.09	1260	28.1	clear 15.4
755	17	234.8		0.0	7.31	1238	28.1	clear 1.09
800								Pump off
820								Pump on
825	17	234.8		0.1	7.08	1251	28.6	cloudy 32.0
830	17	234.8		0.0	7.27	1234	28.3	clear 2.43
835								pump off
855								Pump on
900	17	234.8		0.1	7.09	1238	27.9	cloudy 41.7
905	17	234.8		0.0	7.35	1232	28.0	clear 1.97
910								Pump off
930								Pump on
935	17	234.9		0.0	7.26	1251	28.5	cloudy 24.5
940	17	234.9		0.0	7.43	1234	28.8	clear 1.80

Additional Comments:

PUMPING TEST/DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-005
Well No.: CO-03	Date: 5/22/17
Location:	Measuring Point: 1.4 ft ags, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Setting (ft bls):	Pump Type: Development
How Q Measured: Stopwatch, 5 gal bucket	Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ml/L)	pH	Sp. Cond. (mmhos/cm)	Temp. °F	Comments NTU
945								Pump off
1005								Pump on
1010	17	234.8		6.0	7.02	1230	29.4	cloudy 31.3
1015	17	234.8		0.0	7.30	1239	28.8	clear 2.02
1020								Pump off
1040 ~~1025~~								Pump on
1045 ~~1030~~	17	234.9		0.0	6.89	1257	29.6	cloudy 35.5
1050 ~~1035~~	17	234.9		0.0	6.98	1241	69.7	clear 6.08
1055 ~~1040~~								Pump off
1115								Pump on
1120	17	234.8		0.0	7.08	1236	29.2	cloudy 41.9
1125	17	234.8		0.0	7.34	1239	29.6	~~clear~~ cloudy 49.7
1130	17	234.8		0.0	7.47	1240	28.1	cloudy 20.2
1135	17	234.8		0.0	7.54	1235	28.1	cloudy 19.7
1145	17	234.8		0.0	7.65	1236	27.7	clear 2.4
1150								Pump off
1210								Pump on
1215	17	235.0		0.1	7.31	1241	29.2	cloudy 50.7
1220	17	235.0		0.0	7.45	1243	28.6	clear 8.14
1225								Pump off
1245								Pump on
1250	17	235.0		0.0	7.43	1242	29.3	cloudy 24.8
1255	17	235.0		0.0	7.53	1242	28.8	clear 2.10
1300								Pump off
1330								Pump on
1335	17	235.1		0.0	7.39	1230	29.2	cloudy 24.9
1340	17	235.1		0.0	7.50	1235	28.8	clear 2.71
1345								Pump off

Additional Comments:

PUMPING TEST/DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-005
Well No.: O-03	Date: 5/22/17
Location:	Measuring Point: 1.4 ft bgs, top of casing
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Setting (ft bls):	Pump Type: Development
How Q Measured: Stopwatch, 5 gal bucket	Personnel: S Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ml/L)	pH	Sp. Cond. (mmhos/cm)	Temp. °F	Comments
~~1350~~ 1410	17	235.1		0.0	7.61	1251	29.1	Cloudy 18.4
1415	17	235.1		0.0	7.60	1250	28.1	clear 6.11
1420								Pump off
~~1440~~ 1440								Pump on
1445	17	234.9		0.0	7.60	1236	29.3	Cloudy 56.8
1450	17	234.9		0.0	7.62	1228	29.3	clear 3.11
1455								Pump off
~~1515~~ 1515								Pump on
1520	17	234.8		0.0	7.22	1231	29.9	Cloudy 21.4
1525	17	234.8		0.0	7.65	1230	29.3	Clear 3.97
1530								Pump off
1550								Pump on
1555	17	234.8		0.0	7.72	1224	30.0	Cloudy 24.0
1600	17	234.8		0.0	7.71	1237	29.0	clear 3.77
1605								Pump off
1625								Pump won't start
								End

Additional Comments:

APPENDIX I

Well Video Log

Southwest Exploration Services, LLC

borehole geophysics & video services

Southwest Exploration Services, LLC

25811 S. Arizona Avenue Chandler, AZ. 85248

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Florence Copper** Survey Date: **June 05, 2017**

Address: **1575 W. Hunt Hwy** Invoice: **7974** Run: **1**

City: **Florence** State: **Az** Zip: **85132** Well Name: **O-03**

Requested By: **Florence Copper** P.O.: Well Owner: **Florence Copper**

Copy To: **Florence Copper** Camera: **1 5/8" Color Camera**

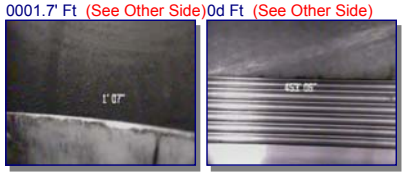
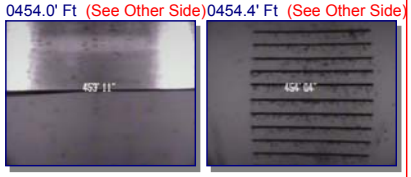
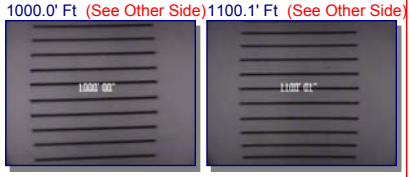
Reason For Survey: **General Inspection** Zero Datum: **Top of Casing**

Location: **Florence Copper** Depth: **1200 Ft** Vehicle: **290**

Field: **Florence Copper**

Csg. I.D.@ Surface **5.25 In.** I.D. Reference: **Measured** Casing Buildup: **None**

Operator: **Don Eckman** Lat.: Long.: Sec: Twp: Rge:

Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
0001.7' Ft (See Other Side) 0d Ft (See Other Side) 		Zeroed side view at top of csing.
		Inspected several casing joints during survey. All appear to be in good condition.
	1.07'	Top of fiberglass casing.
	264.5'	Static water level. Visibilty good.
0454.0' Ft (See Other Side) 0454.4' Ft (See Other Side) 	453.4'	Top of PVC horixontal slot perforations.
		Perforations appear open.
	1185'	Bio material on casing.
	1201.5'	Bottom fill. End of survey.
0600.3' Ft (See Other Side) 0700.0' Ft (See Other Side) 		
0800.4' Ft (See Other Side) 0900.1' Ft (See Other Side) 		
1000.0' Ft (See Other Side) 1100.1' Ft (See Other Side) 		
1194.3' Ft (See Other Side) 1199.5' Ft (See Other Side) 		

Notes:

Page Number: 1

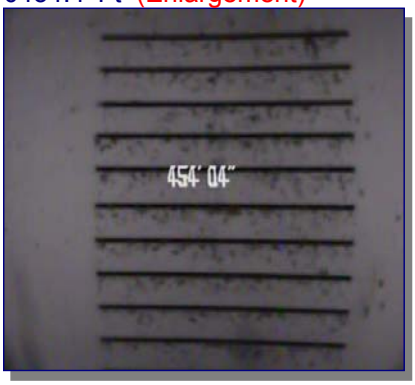
12 WELLBORE SHAPSHOTS

0001.7' Ft (Enlargement)

0d Ft (Enlargement)

0454.0' Ft (Enlargement)

0454.4' Ft (Enlargement)

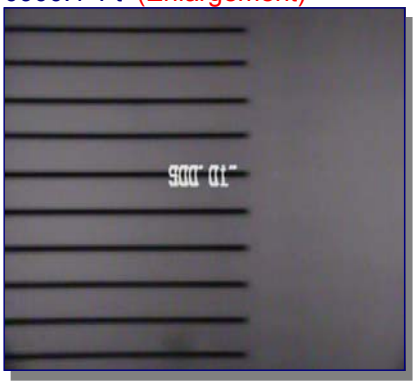


0600.3' Ft (Enlargement)

0700.0' Ft (Enlargement)

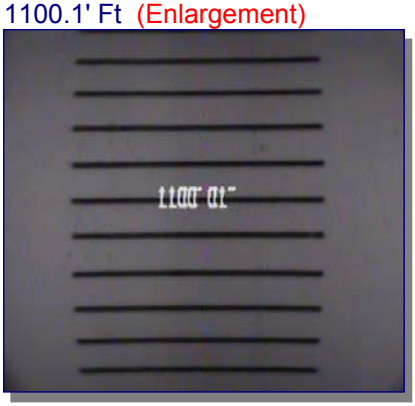
0800.4' Ft (Enlargement)

0900.1' Ft (Enlargement)

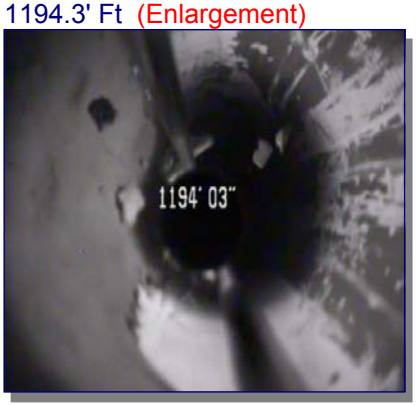


1000.0' Ft (Enlargement)

1100.1' Ft (Enlargement)



1194.3' Ft (Enlargement)



1199.5' Ft (Enlargement)